

131785

PHASE I AND PHASE II  
REMEDIAL INVESTIGATION FINAL REPORT  
RECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA

Prepared by:

DAMES & MOORE



MARCH 29, 1993

VOLUME 1 OF 4

AR301961



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March 29, 1993

Mr. David G. Byro  
Remedial Project Manager  
United States Environmental Protection Agency  
Region III (3HW21)  
Southeastern Pennsylvania Remedial Section  
841 Chestnut Street  
Philadelphia, Pennsylvania 19107

Re: Recticon/Allied Steel Site  
Parker Ford, Pennsylvania  
Transmittal of Final Phase I and Phase II  
Remedial Investigation Report

Dear Mr. Byro:

Please find enclosed 11 copies of the revised text for the final RI report for the referenced site. The revised text incorporates comments made by the United States Environmental Protection Agency (USEPA) as transmitted in your letter of February 12, 1993 (Attachment 1). Each copy of the revised text includes copies of revised figures, revised tables, insertions into Appendixes for the report, a revised Appendix W; and two new Appendixes (Appendices X and Y). The RI report has been revised to address your comments as follows.

**RESPONSE TO COMMENTS**

USEPA COMMENT	RESPONSE
General Comments 1, 2, and 3	USEPA's comment indicated that the general comments concerning the interpretation of the hydrogeologic data for the site are esoteric and have a minor bearing on the outcome of the eventual remediation. Dames & Moore agrees with this comment and has addressed the three technical comments by indicating in the text of the RI that USEPA does not entirely agree with the technical presentation and that, as directed in Comment 2, that the data interpretation is speculative and represents a first approximation.

Comment-4 -- Page 1, Section 1.0, third paragraph.....	The text has been modified to indicate that a risk is present, however, the contaminants (PAH, copper, and zinc) may be representative of road surface runoff.
Comment 5 -- Page 1, last paragraph...	The text has been modified to present the results of verification sampling in the vicinity of R/A7. Section 6.0 has been amended to the report to present these results.
Comment 6 -- Page 2, fifth paragraph	The paragraph was amended to reflect USEPA's opinion.
Comment 7 -- Page 2, last bullet	The paragraph was amended to indicate that the 200 ft. depth represented the minimum depth of contamination in the bedrock aquifer.
Comment 8 -- Page 3, second bullet	The text has been amended to indicate that the shallow and deep portions of the bedrock aquifer were investigated.
Comment 9 -- Page 8	The text was amended to indicate that the USGS well schedules were included with the soil boring logs in Appendix G. Copies of the well schedules have been included in this submission for presentation in Appendix G.
Comment 10 -- Page 16, first paragraph	The text has been amended to indicate that DBR-12 may not be upgradient.
Comment 11 -- Page 23, first paragraph	The text has been amended to include a discussion of the copper and zinc occurring downgradient at elevated concentrations. Dames & Moore's opinion that the copper and zinc levels may be the result of roadway runoff is also included.
Comment 12, -- Page 31, third paragraph	The text has been modified to reflect USEPA's opinion that the well yield is related to strike and dip of bedding planes.
Comment 13, -- Page 32, second paragraph	The term "perched" has been removed

Comment 14, -- Page 36, second paragraph	The words "can possibly be" have been added.
Comment 15, -- Aquifer Test analysis	The text has been modified to reflect USEPA's opinion
Comment 16, -- Page 44, last paragraph	The text has been modified to qualify the use of the 30-day model duration.
Comment 17, -- Page 47	The text has been modified to indicate SOQ's into the discussion of ground water quality.
Comment 18, -- Page 54, second paragraph	A reference was made to the discussion to reflect the findings of the Phase II investigation (i.e. refinement of the plume axis).
Comment 19, -- page 54	The text was modified to present the potential for residual soil contamination seasonally affecting ground water quality.
Comment 20, -- Page 55, second paragraph	The results of the verification soil sampling were added to the text to support our opinion that the TCE impacts noted for R/A7 are of limited areal extent.
Comment 21, -- Page 56, first paragraph	The text was modified to indicate that the extent of contamination has not been fully delineated and that a TCE concentration of 860 ug/l was detected in DBR-9.
Comment 22, -- Page 61	A discussion of the requirement for a Phase I archaeological evaluation has been presented in the text with the stipulation that the evaluation will be performed prior to implementation of construction activities.
Comment 23	The U.S. Wildlife Service and PADER negative declarations comprise Appendix Y, a new appendix for the report (enclosed)

Comment 24, -- Page 66	The text has been modified to reflect: 1)Historic data has indicated levels of contaminants in the drainage ditch samples; and 2) background ground water levels are defined by residential well concentrations.
Comment 25, -- Figure 4-1..	The figure has been modified to indicate the PAH concentrations in BAP equivalents
Comment 26, -- Figure 4-38..	This figure was not modified because the text was modified to indicate that this map is based solely on the Phase I data and that our understanding of the plume dimensions has been refined in the discussion of the Phase II results.
Comment 27, Table 4-5, page 1 of 16...	The table has been modified, as requested.
Comment 28, Table 4-15...	The table has been modified to indicate that the MCL for lead is 15 ppb.
Comment 29, -- Page 74 first paragraph..	This paragraph did not indicate that isoconcentration lines were presented in the figures. However, based on the USEPA comment, isoconcentration lines were added to the figure.
Comment 30, -- Page 74, second paragraph...	The discussion of potential upgradient sources was modified to reflect USEPA's opinion.
Comment 31, -- Page 74, third paragraph...	The text was modified to provide a drawdown for the pumping well.
Comment 32, -- Figures 5-3, 5-4, 5-6, 5-7...	Contours were added to the figures. New figures are attached for insertion into the RI report.
Comment 33, -- Page 81, first bullet	The text was modified to reflect the contention that residential monitoring wells define background conditions.
Comment 34, -- Page 82, first bullet...	The text was modified to discuss the implications of PAH and copper and zinc in the downgradient sediment samples.

Comment 35, -- Page 82, third bullet...	The results of the verification soil sampling program are discussed in the revised text.
Comment 36, -- Page 82, fifth bullet...	The text has been modified to indicate that ground water beneath the Allied Steel property in the shallow portion of the bedrock aquifer can be captured by pumping OW-2 at a rate of 20 gpm and that additional aquifer testing will be required to evaluate recovery from deeper in the aquifer both on the property and downgradient of the property.
Comment 37, -- Page 83, second and third paragraphs	The paragraphs have been deleted from the text.
Comment 38, -- Page 84, fourth paragraph...	The text has been modified to include the potential for channeling.
Comment 39, -- Page 83, sixth paragraph...	The paragraph has been deleted, as instructed.
Comment 40, -- Page 84, first paragraph...	The text has been modified to indicate that the step test indicated 6 feet of drawdown at pumping rate of 38 gpm.
RISK ASSESSMENT COMMENTS	The revised risk assessment is presented in Appendix W. A table of responses to comments is presented in the front of the risk assessment.

The attachments to this letter present the following:

- Revised RI text
- Revised figures for the RI report
- Revised tables for the RI report
- Additions to Appendix G (USGS well schedules and boring logs for the verification sampling program to be included with the boring log appendix)
- Appendix X, a new appendix for the RI report that presents the analytical laboratory summary sheets for the verification sampling program

- Appendix Y, a new appendix that presents negative determinations from the fish and wildlife service and PADER
- New RI report covers and spine labels for insertion into the former draft report

If you should have any questions or comments concerning this report, please do not hesitate to call.

Very truly yours,

DAMES & MOORE



Ralph T. Golia  
Managing Associate, Geosciences



Michael J. Edelman  
Senior Hydrogeologist

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cc: Kevin Hess, PADER (6 copies)  
Irving Hirsch, Esq.  
David Nokker, Esq.  
Jack Carmody, Rockwell International (2 copies)  
Jerry Muys, Esq.

## TABLE OF CONTENTS

	<u>Page</u>
1.0 Executive Summary . . . . .	1
2.0 Introduction . . . . .	4
3.0 Site Background . . . . .	5
3.1 Location and Physiography . . . . .	5
3.2 Site Description . . . . .	5
3.2.1 Former Recticon Facility . . . . .	5
3.2.2 Allied Steel Facility . . . . .	6
3.3 Site History . . . . .	7
3.3.1 Former Recticon Facility . . . . .	7
3.3.2 Allied Steel Facility . . . . .	8
3.4 Waste Handling Practices . . . . .	8
3.4.1 Former Recticon Facility . . . . .	8
3.4.1.1 Waste Acidic and Caustic Solutions . . . . .	8
3.4.1.2 Dragout Water and Polishing Slurry . . . . .	9
3.4.1.3 TCE/Solvent Handling Practices . . . . .	9
3.4.2 Allied Steel Facility . . . . .	9
3.4.2.1 Waste SAF-T-SOLVENT . . . . .	10
3.4.2.2 Air Compressor Contact Water . . . . .	10
3.4.2.3 Water Use to Test Fabricated Vessels . . . . .	10
3.5 Previous Investigations . . . . .	10
3.5.1 Former Recticon Facility . . . . .	10
3.5.2 Allied Steel Facility . . . . .	11

## TABLE OF CONTENTS

	<u>Page</u>
3.6 Potential Source Areas . . . . .	12
3.6.1 Potential On-Site Sources . . . . .	12
3.6.1.1 Former Recticon Facility . . . . .	13
3.6.1.2 Allied Steel Facility . . . . .	13
3.6.2 Potential Off-Site Source Areas . . . . .	13
3.7 Land and Water Use . . . . .	14
3.8 Climate . . . . .	15
3.9 Emergency Response/Removal Action . . . . .	15
4.0 Phase I Remedial Investigation and Results . . . . .	16
4.1 Project Planning and Organization . . . . .	16
4.2 Surface Soil and Surface Water . . . . .	16
4.2.1 Background Surface Soil Samples . . . . .	17
4.2.1.1 Volatile Organic Compounds . . . . .	17
4.2.1.2 Semivolatile Organic Compounds . . . . .	17
4.2.1.3 Inorganic Parameters . . . . .	18
4.2.2 Surface Soil Samples . . . . .	18
4.2.2.1 Volatile Organic Compounds . . . . .	18
4.2.2.2 Semivolatile Organic Compounds . . . . .	18
4.2.2.3 Inorganic Parameters . . . . .	19
4.2.2.4 Geotechnical Analyses . . . . .	20
4.2.3 Surface Water . . . . .	20
4.2.3.1 Volatile Organic Compounds . . . . .	20
4.2.3.2 Semivolatile Organic Compounds . . . . .	20
4.2.3.3 Inorganic Parameters . . . . .	20
4.3 Soil Vapor Survey . . . . .	21
4.3.1 Former Recticon Facility . . . . .	22
4.3.2 Allied Steel Facility . . . . .	22

## TABLE OF CONTENTS

	<u>Page</u>
4.4 Soil Boring Program . . . . .	23
4.4.1 Former Recticon Facility . . . . .	23
4.4.1.1 Volatile Organic Compounds . . . . .	23
4.4.1.2 Semivolatile Organic Compounds . . . . .	24
4.4.1.3 Inorganic Parameters . . . . .	24
4.4.2 Allied Steel Facility . . . . .	25
4.4.2.1 Volatile Organic Compounds . . . . .	25
4.4.2.2 Semivolatile Organic Compounds . . . . .	25
4.4.2.3 Inorganic Parameters . . . . .	25
4.5 Hydrogeologic Investigation . . . . .	26
4.5.1 Site Geology and Hydrogeology . . . . .	26
4.5.1.1 Regional Geology . . . . .	26
4.5.1.2 Site Geology . . . . .	26
4.5.1.3 Site Hydrogeology . . . . .	27
4.6 Aquifer Test Analysis . . . . .	30
4.6.1 Introduction . . . . .	31
4.6.2 Aquifer Test Data Analysis . . . . .	33
4.6.2.1 Pumping Well OW-2 Drawdown Curve . . . . .	33
4.6.2.2 Observation Well BR-5 Drawdown Curve . . . . .	33
4.6.2.3 Observation Well OW-1 Drawdown Curve . . . . .	34
4.6.2.4 Observation Well BR-8 Drawdown Curve . . . . .	35
4.6.2.5 Observation Well BR-3 Drawdown Curve . . . . .	36
4.6.3 Response of Overburden Aquifer to Pumping of OW-2 . . . . .	36
4.6.3.1 Observation Well OB-5 Drawdown Curve . . . . .	37
4.6.3.2 Observation Well OB-8 Drawdown Curve . . . . .	37
4.6.3.3 Significance of Overburden Aquifer Response to Pumping of OW-2 . . . . .	37
4.6.3.4 Overburden Aquifer Response to Other Piezometric Changes in Bedrock Aquifer . . . . .	38
4.6.3.5 Long-Term Water Level Changes . . . . .	38
4.6.3.6 Overview of Pumping Test Results . . . . .	38

## TABLE OF CONTENTS

	<u>Page</u>
4.7 Groundwater Sampling . . . . .	40
4.7.1 April 1991 Analytical Results . . . . .	40
4.7.1.1 Volatile Organic Compounds . . . . .	41
4.7.1.2 Semivolatile Organic Compounds . . . . .	42
4.7.1.3 Inorganic Parameters . . . . .	42
4.7.2 July 1991 Analytical Results . . . . .	45
4.7.3 September 1991 Analytical Results . . . . .	46
4.7.4 November 1991 Analytical Results . . . . .	47
4.7.5 Groundwater Quality Trends . . . . .	47
4.8 Removal Action . . . . .	49
4.8.1 Summary of Removal Action Sampling Activities . . . . .	49
4.8.2 January 1990 Groundwater Sampling and Analyses Program . . . . .	51
4.8.3 Removal Actions to Date . . . . .	51
4.8.4 Future Actions . . . . .	54
4.9 Ecosystems Investigation . . . . .	54
4.9.1 Wetlands Delineation . . . . .	54
4.9.2 Site Soil and Vegetation . . . . .	55
4.9.3 Site Topography and Drainage . . . . .	56
4.9.4 Gamelands, Natural Areas, and Wild Areas . . . . .	57
4.9.5 Pennsylvania Scenic Rivers Inventory . . . . .	57
4.9.6 Flood Mapping . . . . .	58
4.9.7 Habitat . . . . .	58
4.9.8 Threatened and Endangered Species . . . . .	58
4.9.9 Prime Farmland . . . . .	58
4.9.10 Potential Environmental Receptors . . . . .	58
4.9.11 Archaeological Concerns . . . . .	59
4.9.12 Fish and Wildlife . . . . .	59
5.0 Phase II Investigations and Results . . . . .	60
5.1 Project Overview . . . . .	60
5.2 Deep Monitoring Well Installation . . . . .	61
5.2.1 Installation of Five Deep Bedrock Monitoring Wells . . . . .	61
5.2.2 Video Camera Survey and Geophysical Logging . . . . .	61
5.2.3 Packer Testing . . . . .	62

## TABLE OF CONTENTS

	<u>Page</u>
5.2.4 DBR Well Modifications . . . . .	63
5.3 Groundwater Sampling and Analysis . . . . .	64
5.4 Aquifer Testing . . . . .	65
5.5 Long-Term Water Level Study . . . . .	66
5.6 Groundwater Elevations . . . . .	67
6.0 Verification Soil Sampling . . . . .	68
7.0 Results of the Baseline Risk Assessment . . . . .	69
7.1 Introductions . . . . .	69
7.2 Summary of Non-Carcinogenic Effects . . . . .	70
7.3 Summary of Carcinogenic Effects . . . . .	70
7.4 Limitations . . . . .	71
8.0 Conclusions . . . . .	73
9.0 References . . . . .	75

AAW01D3E

## LIST OF TABLES

### Table

- |      |   |
|------|---|
| 3-1  | Volatile Organic Compounds - Previous Groundwater Analyses                          |
| 4-1  | TCL and TAL Analytical Parameters   |
| 4-2  | Chemical and Physical Parameters - Surface Water and Sediment Samples               |
| 4-3  | Surface Soil Samples - Analytical Results   |
| 4-4  | Surface Water Samples - Analytical Results  |
| 4-5  | Soil Boring Samples - Analytical Results  |
| 4-6  | Monitoring Well Construction Details  |
| 4-7  | Groundwater Elevation Data - March 4, 1991  |
| 4-8  | Groundwater Elevation Data - April 2, 1991  |
| 4-9  | Groundwater Elevation Data - July 10, 1991  |
| 4-10 | Groundwater Elevation Data - September 17, 1991                                     |
| 4-11 | Groundwater Elevation Data - November 4, 1991                                       |
| 4-12 | Summary of OW-2 Pumping Test Results  |
| 4-13 | Projected Drawdowns at Observation Wells After Pumping OW-2 at 16.5 GPM for 30 Days |
| 4-14 | Groundwater Sample Analytical Results - April 2, 1991                               |
| 4-15 | Comparison of MCL's to Inorganic Parameters in April 2, 1991 Groundwater Samples    |
| 4-16 | Groundwater Sample Analytical Results - July 10, 1991                               |
| 4-17 | Groundwater Sample Analytical Results - September 17 and 18, 1991                   |
| 4-18 | Groundwater Sample Analytical Results - November 4, 1991                            |
| 4-19 | Removal Action Resident List  |
| 4-20 | Off-Site Well Water Sampling Results - January 1990                                 |

**LIST OF TABLES**  
(Continued)

**Table**

4-21	Summary of Quarterly Off-Site Well Water Sampling Results
4-22	Summary of Semi-Annual Off-Site Well Water Sampling Results
4-23	TCE Concentration and Water Usage in Off-Site Wells
5-1	Packer Testing Zones DBR Boreholes
5-2	Hydraulic Head Distributions - Deep Borehole Packer Test
5-3	Analytical Results for Ground Water Collected 6/29/92 - 7/10/92
5-4	Specific Capacity Calculations - DBR Boreholes
5-5	Summary of Pertinent Data and Rationale For Selection of Monitoring Well Zones
5-6	Well Construction Details DBR Monitoring Wells
5-7	Ground Water Sample Analytical Results - September, 1992
6-1	Summary of the Verification Soil Sampling Program
7-1	Summary of Critical Effects for Chemicals with a Hazard Index $>0.001$
7-2	Summary of Hazard Quotients and Hazard Indices Based on Critical Effect for the Future On-Site Worker Scenario at the Recticon/Allied Steel Site
7-3	Summary of Hazard Quotients and Hazard Indices Based on Critical Effect for the Future On-Site Residential Scenario
7-4	Summary of Carcinogenic Risks for each Scenario for the Recticon/Allied Steel Site

## LIST OF FIGURES

### Figure

- 3-1 Site Location Map
- 3-2 Site Vicinity Map
- 3-3 Former Recticon Facility Map
- 3-4 Allied Steel Facility Map
- 4-1 Surface Soil and Surface Water Sample Locations
- 4-2 Soil Gas Survey Locations - Former Recticon Facility
- 4-3 Soil Gas Survey Locations - Allied Steel Facility
- 4-4 TCE Soil Gas Survey Results - Former Recticon Facility
- 4-5 TCA Soil Gas Survey Results - Former Recticon Facility
- 4-6 Toluene Soil Gas Survey Results - Former Recticon Facility
- 4-7 TCE Soil Gas Survey Results - Allied Steel Facility
- 4-8 Toluene Soil Gas Survey Results - Allied Steel Facility
- 4-9 Soil Boring Locations
- 4-10 Geologic Cross Section A-A'
- 4-11 Geologic Cross Section B-B'
- 4-12 Geologic Cross Section Location Map
- 4-13 Groundwater Elevation Contour Map - Overburden Aquifer/ March 4, 1991
- 4-14 Groundwater Elevation Contour Map - Bedrock Aquifer/ March 4, 1991
- 4-15 Vertical Gradient for Monitoring Well Clusters - March 4, 1991
- 4-16 Groundwater Elevation Contour Map - Overburden Aquifer/ April 2, 1991
- 4-17 Groundwater Elevation Contour Map - Bedrock Aquifer/ April 2, 1991
- 4-18 Vertical Gradient for Monitoring Well Clusters - April 2, 1991

LIST OF FIGURES  
(Continued)

Figure

- 4-19 Groundwater Elevation Contour Map - Overburden Aquifer/ July 10, 1991
- 4-20 Groundwater Elevation Contour Map - Bedrock Aquifer/ July 10, 1991
- 4-21 Vertical Gradient for Monitoring Well Clusters - July 10, 1991
- 4-22 Groundwater Elevation Contour Map - Overburden Aquifer/ September 17, 1991
- 4-23 Groundwater Elevation Contour Map - Bedrock Aquifer/ September 17, 1991
- 4-24 Vertical Gradient for Monitoring Well Clusters - September 17, 1991
- 4-25 Groundwater Elevation Contour Map - Overburden Aquifer/ November 4, 1991
- 4-26 Groundwater Elevation Contour Map - Bedrock Aquifer/ November 4, 1991
- 4-27 Water Level Rises in BR-2 and BR-4
- 4-28 Projected Cone of Depression From Pumping OW-2 at 16.5 gpm for 30 Days
- 4-29 Projected Piezometric Surface For Bedrock Aquifer Resulting from Pumping OW-2 at 16.5 gpm for 30 Days
- 4-30 VOC Concentrations in Groundwater - Overburden Wells - April, July, September, November 1991
- 4-31 VOC Concentrations in Groundwater - Bedrock Wells - April, July, September, November 1991
- 4-32 Total VOCs in Groundwater - Overburden Wells - April, July, September, November 1991
- 4-33 Total VOCs in Groundwater - Bedrock Wells - April, July, September, November 1991
- 4-34 Trichloroethene in Groundwater - Bedrock Wells - April, July, September, November 1991
- 4-35 Trichloroethene in Groundwater - Overburden Wells - April, July, September, November 1991

LIST OF FIGURES  
(Continued)

Figure

- 4-36 Cis-1,2-Dichloroethene in Groundwater - Bedrock Wells - April, July, September, November 1991
- 4-37 Cis-1,2-Dichloroethene in Groundwater - Overburden Wells - April, July, September, November 1991
- 4-38 TCE Concentration in On-Site and Off-Site Well Water Sampled January 1990, June 1990, and September 1991
- 4-39 Waterway Delineation Map
- 4-40 Chester County Soil Survey Map
- 4-41 State Game Lands No. 234
- 4-42 PA Game Commission Map of Public and Leased Lands
- 4-43 FEMA Floodplain Map
- 4-44 Prime Farmland Map
- 5-1 Site Map Showing Monitoring Well Locations
- 5-2 VOC Concentrations in Ground Water - Overburden - September 1992
- 5-3 TCE Concentration Map Ground Water - Overburden Wells - September 1992
- 5-4 cis-1,2-DCE Concentration Map Ground Water Overburden Wells - September 1992
- 5-5 VOC Concentrations in Ground Water Shallow Bedrock - September 1992
- 5-6 TCE Concentration Map Ground Water - Shallow Bedrock Wells - September 1992
- 5-7 cis-1,2-DCE Concentration Ground Water Shallow Bedrock Wells - September 1992
- 5-8 VOC Concentrations in Ground Water Deep Bedrock - September 1992
- 5-9 Step Test (10 GPM) DBR-5

## LIST OF FIGURES

(Continued)

### Figure

- 5-10 Step Test (25 GPM) DBR-5
- 5-11 Step Test (38 GPM) DBR-5
- 5-12 Step Test Data 12/13/92 15:30 Through 18:30 - OB-5
- 5-13 Step Test Data for OW-2 10/13/92 15:30 through 18:30
- 5-14 Step Test Data for BR-3 18/13/92 15:30 through 18:30
- 5-15 Step Test Data for BR-5 10/13/92 15:30 through 18:30
- 5-16 Step Test Data for BR-8 10/13/92 15:30 through 18:30
- 5-17 Step Test Data for DBR-9 10/13/92 15:30 through 18:30
- 5-18 Step Test Data for DBR-10 10/13/92 15:30 through 18:30
- 5-19 Background Data for Step Test BR-8 10/8/92 16:00 through 10/13/92 16:00
- 5-20 Background Data for Step Test DBR-10
- 5-21 Background Data for Step Test BR-3
- 5-22 Background Data for Step Test DBR-9
- 5-23 Background Data for Step Test BR-5
- 5-24 Background Data for Step Test OB-5
- 5-25 Background Data for Step Test OW-2
- 5-26 Background Data for Step Test OW-1
- 5-27 One-hour Aquifer Test Pumping DBR-5 at 38 gpm
- 5-28 Ground Water Elevation Contour Map Overburden Aquifer October 13, 1992
- 5-29 Ground Water Elevation Contour Map Shallow Bedrock October 13, 1992
- 5-30 Ground Water Elevation Contour Map Deep Bedrock October 13, 1992

LIST OF FIGURES  
(Continued)

Figure

- 5-31      Vertical Gradient Between Shallow and Deep Bedrock Wells October 13, 1992
- 5-32      Vertical Gradient Between Overburden and Shallow Wells October 13, 1992
- 7-1        Comparison of Carcinogenic Risks Associated with PAH's in Background and On-Site Samples

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## LIST OF APPENDICES

### Appendix

- V 2 of 4
- A Field Sampling Procedures (Reproduced from Dames & Moore's December 3, 1990 Phase I RI/FS Work Plan)
  - B Surface Soil Sample Data
  - B-1 Laboratory Summary Sheets and Dames & Moore Data Validation for Surface Soil Samples
  - B-2 Geotechnical Analytical Data for Surface Soil Samples
  - C Laboratory Summary Sheets and Dames & Moore Data Validation Report for Surface Water Samples
  - D Tracer Soil Vapor Investigation Report and Dames & Moore Data Validation Report
  - E Soil Boring Logs
  - F Laboratory Summary Sheets and Dames & Moore Data Validation Report for Soil Boring Samples
  - G Boring Logs and Monitoring Well Construction Details
  - V 3 of 4  
H Aquifer Test Procedures (Reproduced from Dames & Moore's September 10, 1991 Correspondence to USEPA)
  - I Aquifer Test Drawdown-Recovery Data and Hydrographs
  - J Laboratory Summary Sheets and Dames & Moore Data Validation Report for April 1991 Groundwater Samples
  - K Laboratory Summary Sheets and Dames & Moore Data Validation Report for July 1991 Groundwater Samples
  - L Laboratory Summary Sheets and Dames & Moore Data Validation Report for September 1991 Groundwater Samples
  - M Laboratory Summary Sheets and Dames & Moore Data Validation Report for November 1991 Groundwater Samples
  - N Video Survey and Packer Test Procedures

LIST OF APPENDICES  
(Continued)

Appendix

V 4 of 4

<u>P</u>	Packer Test Analytical Data
Q	Packer Test Hydrographs
R	EPA Comment Letter Concerning Well Modifications
S	DBR Monitoring Well Boring Logs and Monitoring Well Construction Details
T	Groundwater Sampling Analytical Data
U	Treated Effluent Laboratory Data
V	Long-Term Water Level Study Hydrographs
W	Baseline Risk Assessment
X	Verification Sampling Analytical Reports

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## 1.0 EXECUTIVE SUMMARY

This report presents the results of the Phase I and Phase II Remedial Investigation (RI) performed by Dames & Moore at the Recticon/Allied Steel site in Parker Ford, Pennsylvania. The RI was performed in accordance with the Phase I RI work plan dated December 6, 1990 and the Phase II work plan dated May 12, 1992, which were prepared by Dames & Moore and approved by United States Environmental Protection Agency (USEPA). The Phase I scope of work was implemented from January 1991 through December 1991 and the Phase II scope of work was implemented from May 1992 through November 1992.

The Phase I RI was designed to characterize environmental conditions at the site. Implementation of the Phase I RI involved the collection of surface soil samples, surface water samples, soil boring samples, and 3 rounds of groundwater samples from 16 monitoring wells installed during the investigation. Selection of sampling locations for all media that were sampled (i.e., surface soil, surface water, subsurface soil, and groundwater) was based upon review of existing site information provided by USEPA and previous site owners, and the results of a soil vapor survey performed during the RI. The existing site information included environmental investigation reports previously prepared by several environmental and engineering consultants, site inspection reports prepared by state and federal environmental agencies, and communication with historic site employees.

The results of this investigation have identified that:

- No concentrations of TCL or TAL parameters were detected above background concentrations (as identified in sediment samples R-SS7A, R-SS7B, and R-SS7C) in surface soil or surface water samples collected during the investigation. Concentrations of copper and zinc up to 10 times the concentrations detected in the background samples were present in the downgradient sediment samples. Dames & Moore believes that the downgradient concentrations are related to roadway surface runoff from Route 724, rather than site activities.
- Although PAH concentrations in surface soil samples are indicative of greater than  $10^{-6}$  risk, it is Dames & Moore's opinion that the PAH concentrations are due to road surface runoff.
- Thirteen soil samples were collected from eight soil borings in the vicinity of elevated soil vapor concentrations. The thirteen soil samples were collected based on field screening to represent the highest measurable volatile organic compound readings. Trichloroethene and 1,2-dichloroethene were not detected above the 5 ug/kg laboratory detection limit in nine of the soil samples. Three samples with detectable levels of TCE had concentrations of 14 ug/kg or less and no detectable concentrations of DCE. The sole sample with what would be considered noteworthy concentrations of TCE (1,400D ug/kg) and DCE (48D ug/kg) is R/A7 (9.5 to 11 feet).

A soil sample collected from R/A7A, a boring located approximately 15 feet away from R/A7, had no detectable levels of TCE or DCE. Thus, it appears that the concentrations detected at R/A7 are of very limited extent. Verification sample collection from four soil borings located within 10 feet of R/A7 did not have detectable TCE or DEC concentrations.

- Regional groundwater flow is generally to the east-southeast with seasonal variations to the southeast.
- The site is underlain by two aquifers, an overburden aquifer within the unconsolidated soil overlying the bedrock, and a bedrock aquifer that underlies the soil-bedrock interface. The relatively high yields of deep bedrock monitoring wells compared to the shallow bedrock monitoring wells suggests that the bedrock aquifer increases in permeability with depth.
- TCL semivolatile organic compounds and TAL inorganic parameters were not detected at concentrations of concern in groundwater samples.
- Volatile organic compounds are present in the groundwater of both aquifers. The primary volatile organic compounds detected are TCE and 1,2-DCE. Total volatile organic compound concentrations ranged from 0.76 ug/l to 1,330.1 ug/l in the overburden aquifer, and from 1.35 ug/l to 2,138.92 ug/l in the shallow bedrock aquifer during the April 1991 groundwater sampling event.
- Groundwater samples from upgradient monitoring well clusters OB-2 and BR-2 contained volatile organic compound concentrations of 1,299.99 ug/l and 1,874.44 ug/l respectively, in April 1991. Based on this finding, it is possible that an upgradient source of volatile organic compounds exists. USEPA has suggested the possibility that volatile organic compounds could have migrated from the R/A7 area through the soil to this well cluster and is, therefore, not related to an upgradient source. This contention is not entirely supported by the verification soil sampling performed in February 1993, however, this contention is within the realm of possibility.

The Phase II Remedial Investigation was conducted to further evaluate the extent and degree of volatile organic compounds in soils and groundwater to provide data necessary to evaluate remedial alternatives for the site. The results of the Phase II Remedial Investigation are:

- Total volatile organic compound concentrations ranged from 2J ug/l to 363.3 ug/l in the overburden aquifer and from 0.69 ug/l to 2,290 ug/l in the shallow bedrock aquifer monitoring wells during the October, 1992 sampling event.
- Comparison of the shallow bedrock concentrations of TCE and c-1,2-DCE to deep bedrock concentrations in comparable monitoring wells (i.e., BR-5 vs. DBR-5) indicate that the deeper bedrock aquifer has had less impact than the shallow bedrock aquifer.

- The presence of volatile organic compounds extends to at least a depth of 200 feet BGS (the maximum depth of investigation to date) at the site as demonstrated by the 750 ug/l and 330 ug/l concentrations of trichloroethene (TCE), and cis-1,2-dichloroethene (c-1,2-DCE), respectively in DBR-5.
- TCE was detected in DBR-9S and DBR-9D at concentrations of 860 J ug/l and 350 ug/l, respectively,. The compound cis-1,2-DCE was detected at concentrations of 220 ug/l in monitoring well DBR-9S and 94 ug/l in DBR-9D. The monitoring well cluster DBR-9S/DBR-9D is located approximately 950 feet downgradient of the site.
- Potential well yields within the deeper portion of the bedrock aquifer are in excess of 38 gpm as evidenced by the step test of DBR-5. The actual yield of the aquifer is dependent on the number and orientation of bedding planes and fractures and is not entirely dependent on well depth.
- Aquifer pumping test results indicate hydraulic connection between the overburden and bedrock aquifers. Projected capture-zone analyses suggest that hydraulic control of the aquifers underlying the site can be achieved by pumping one or two monitoring wells.
- The Baseline Risk Assessment performed for the site evaluated the potential risk associated with current land use and potential future use regarding exposure to on-site workers and residents, off-site residents, and trespassers. The risks associated with the site that exceeded the  $1 \times 10^{-6}$  cancer risk involved the following potential future risks:
  - 1) On-site Worker, Dermal Contact - Soil ( $1.4 \times 10^{-6}$ )
  - 2) On-site Resident, Dermal Contact - Soil ( $2.9 \times 10^{-6}$ )
  - 3) On-site Worker, Ingestion - Groundwater ( $2.9 \times 10^{-4}$ )
  - 4) On-site Resident, Ingestion - Groundwater ( $2.9 \times 10^{-4}$ )
  - 5) On-site Resident, Vapor Inhalation ( $2.6 \times 10^{-4}$ )
  - 6) On-Site Resident, Dermal Contact - Groundwater ( $6.8 \times 10^{-6}$ )

Of the identified cancer risks, item 1) on-site worker - dermal contact and 2) on-site resident - dermal contact have elevated cancer risks due to the presence of polycyclic aromatic hydrocarbons (PAHs) in the surface soil samples. The presence of PAH in upgradient soil samples at roughly the same concentration suggest that the presence of PAHs is likely to be related to anthropogenic sources (i.e., runoff from road surface, exhaust from automobiles, exhaust from industrial establishments) and, therefore, should not be considered risks due to actual site activities. If the contribution of PAH is discounted from site activities, the risks due to contamination from the site are limited to groundwater considerations (ingestion and showering). More than 90% of the risk associated with groundwater is due to the presence of volatile organic compounds. The remaining groundwater risk is associated with the presence of arsenic and beryllium, which may be related to naturally-occurring minerals in the soil. However, the contribution of arsenic and beryllium to the risk associated with the site is minimal.

AR301986

## 2.0 INTRODUCTION

On April 2, 1990, Rockwell International Corporation (Rockwell) and the United States Environmental Protection Agency (USEPA) entered into an Administrative Order of Consent (AOC) pursuant to Sections 104 and 122 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. Sections 9604 and 9622, as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), Pub. L. No. 999-499, 100 Stat. 16B (1986) in which Rockwell agreed, without admitting liability, to perform a Remedial Investigation/Feasibility Study (RI/FS) for the Recticon/Allied Steel Superfund Site (the site) located in Parker Ford, Pennsylvania. In accordance with the AOC, nothing herein shall be deemed an admission of law or fact by Rockwell. Pursuant to and in full and complete compliance with Section VIII of the AOC and all relevant USEPA reference and guidance documents referenced therein, Rockwell submits this draft RI report on the results of implementation of the USEPA-approved work plan.

The draft Phase I work plan was submitted to USEPA on September 27, 1990, and revised on December 3 and 6, 1990, in response to USEPA comments. Work plan approval was transmitted to Rockwell in a letter from USEPA dated December 6, 1990. The Phase II RI Work Plan was submitted to USEPA on May 12, 1992, and approved by USEPA in a letter dated May 13, 1992. This draft report presents the findings of the Phase I and Phase II RI performed at the site. The purpose of the Phase I and Phase II RI was to characterize site conditions, delineate the extent of compounds released to the environment, and conduct a baseline human health and environment risk assessment. This information, coupled with information from previous investigations, will form the basis for the feasibility study (FS) in which potential alternatives for remediation of the site will be evaluated.

AR301988

### 3.0 SITE BACKGROUND

#### 3.1 LOCATION AND PHYSIOGRAPHY

The site is located in Parker Ford, East Coventry Township, Chester County, in southeastern Pennsylvania. It lies approximately 8 miles northwest of Phoenixville and 3.2 miles southeast of Pottstown, along State Route 724 (Figure 3-1). The site is situated within the Lowlands Physiographic Province (Sloto, 1987), which is characterized by low rolling hills that consist of Triassic sedimentary and igneous rocks. This province is the result of the erosion of sandstone and shale units, which are less resistant than the crystalline rocks of the uplands that lie to the south and southwest.

The site is mapped in the Phoenixville 7.5-minute United States Geological Survey (USGS) topographic quadrangle at an approximate elevation of 130 feet above mean sea level (MSL). The topography at the site gently slopes from west to east. Two surface water bodies are situated in the vicinity of the site: the Schuylkill River, approximately 0.5 mile east of the site, and Pigeon Creek, approximately 0.25 mile south of the site.

#### 3.2 SITE DESCRIPTION

The site covers an area of approximately 5 acres at the intersection of Route 724 and Wells Road, and consists of two facilities: the former Recticon facility (Figure 3-2), located at the western corner of the intersection, and the Allied Steel facility (Figure 3-2), located at the eastern corner of the intersection.

##### 3.2.1 Former Recticon Facility

The former Recticon facility consists of a one-story building with manufacturing and office areas, a southeast parking lot with a loading area, and a driveway that extends from Wells Road to a second parking lot northwest of the building (Figure 3-3). Three outside electrical transformers are located along the building's west wall. A septic system is approximately located east of the facility. Detailed construction information regarding the septic system is not available. A settling basin for a waste line (No. 4) was present outside and adjacent to the building's northern corner. A former gravel-topped area was located immediately outside an exit door at the northern corner. A settling basin for the No. 3 waste line was located outside and adjacent to the building's southeastern wall.

Upon closure of the Recticon facility, the building was vacated and decommissioned. The entire scope of the decommissioning process is not known. However, according to the July 26, 1982, Roy F. Weston report, drain lines 2, 3, and 4 were disconnected and plugged. Also, as reported by R.E. Wright Associates, Inc. (REWAI) in May 1985, Recticon Well Nos. 1 and 2 were abandoned (filled with concrete). Glacier, Inc. (formerly Coventry Custom Kitchens) occupied the building during the Phase I investigation. Currently, the property appears to be vacant. A "new deep" production well was reported, by REWAI, to have existed and in use in 1985. This well, W-3, has a reported casing depth of 212.9 feet and a total well depth of 298 feet. The static water level in the well at the time of drilling was 26 feet below ground surface. The bedrock encountered in the well was primarily composed

of red shale. The well information presented here is based on a well schedule dated December 1983 which was provided by USGS. It is located in the northwestern section of the site, along the edge of the parking lot.

Electrical service to the former Recticon facility is provided by Philadelphia Electric Company (PECO). The facility is heated with natural gas supplied by PECO. Sanitary sewage is disposed of through the on-site septic system. Water is supplied by on-site production well W-3.

### 3.2.2 Allied Steel Facility

The Allied Steel facility has been vacant since approximately 1988. Decommissioning activities are not known. As shown on Figure 3-4, the facility includes two buildings: a fabrication shop and an office. The office and a parking area lie west of the fabrication shop. To the south is an area of metal and wood debris including two abandoned tanks; the former locations of the tanks are unknown. To the southeast is the debris-filled crane area.

Northeast of the fabrication shop is a 2- to 3-foot-deep drainage ditch. North of the fabrication shop are two drainage ditches. The Allied Steel property contains a drainage ditch, which collects surface drainage from on-site and off-site sources including Total Recovery, Inc., located north of the Allied Steel facility, and the former Recticon facility.

A septic system lies southwest of the fabrication shop, as shown on Figure 3-4. No construction details of the septic system are known to exist. Outside the northwest corner of the fabrication shop is an air compressor area. A former scale for weighing steel products, located southeast of the office within an in-ground concrete pit, had dimensions of 43 feet long by 13 feet wide by 6 feet deep. The truck scale pit is currently empty and currently contains standing water. Dames & Moore recognized the pit as a potential hazard during the investigation and, as a measure to protect workers during site activities, laid timbers across the pit. The timbers have subsequently been removed and the contents of the pit have been emptied. A separate pit, reportedly used for burning trash, is located in the southeastern portion of the site. Debris, consisting primarily of metal, broken concrete and wooden pallets, occurs at several locations on the property.

Three groundwater production wells exist at the Allied Steel facility:

- PW1 (south of the fabrication shop)
- PW2 (housed within the fabrication shop)
- PW3 (southwest of the fabrication shop)

Appendix G presents USGS well schedules for the pumping well (W-3) at the Recticon facility and production well PW-1 for the Allied Steel property.

The fabrication shop building is accessed from Wells Road via a paved driveway. A gravel driveway and parking area are situated along the fabrication shop, with access to Wells Road and State Route 724. A concrete pad and an overhead crane are located east of the fabrication shop.

An aboveground water tank and air stripping tower are situated along the exterior of the eastern wall of the fabrication shop. An aboveground storage tank, reportedly used to store heating oil, is located along the exterior of the western wall of the office building. The tank was empty during the site investigations.

The facility is bounded to the north by railroad tracks. Surface drainage is directed toward a drainage culvert parallel to Wells Road and a drainage ditch along the railroad tracks at the rear of the facility.

Electrical service at the Allied Steel facility is provided by PECO. The facility is heated with oil. Sanitary sewage is disposed of via a septic tank and leach field located southwest of the fabrication building. Water is supplied from three on-site wells. The facility is currently unoccupied.

### 3.3 SITE HISTORY

#### 3.3.1 Former Recticon Facility

Recticon, a former subsidiary of Rockwell, manufactured silicon wafers at the facility between 1974 and 1981. During that time, Recticon leased the facility from Highview Gardens, Inc. of Fairview Village, Pennsylvania. A history of the facility owners and/or occupants of the facility since 1969 is as follows:

- September 11, 1969 - Mr. Elton MacKissic and Ms. Violet MacKissic sold the property to Highview Gardens, Inc. (Highview).
- 1971 - Present building was constructed.
- March 1, 1971 - Highview leased the property to Varadyne Industries, Inc. Varadyne lease expiration date was February 28, 1976.
- September 18, 1972 - Varadyne subleased the facility to Recticon, according to the RI/FS consent order.
- March 1976 - Recticon leased the facility for 2 years.
- January 1978 - Recticon lease extended.
- March 1980 - Lease extended.

- January 1981 - Lease extended.
- April 1981 - Recticon lease expired.
- April 1981 to June 1989 - Several unnamed tenants occupied the facility.
- June 1989 - First Oxford Management Group leased the property (beginning date of lease unknown).
- Present - Coventry Custom Kitchens occupied the facility during the Phase I investigation. However, the property currently appears to be unoccupied.

### 3.3.2 Allied Steel Facility

Allied Steel Corporation purchased the property in the early 1970s. Allied Steel fabricated steel at the facility from 1972 to approximately 1988. Information regarding former owners is currently not available.

## 3.4 WASTE HANDLING PRACTICES

This discussion of waste handling practices is based on information provided in reports prepared by Roy F. Weston, Inc. (1980,1981), NUS Corporation (1986), and the Pennsylvania Department of Environmental Resources (PADER) (1978 through 1987). Additional sources of information include correspondence from PADER and Rockwell International Corporation to various agencies.

### 3.4.1 Former Recticon Facility

The production of silicon wafers resulted in at least four waste streams: waste acidic and caustic solutions, "dragout water," polishing slurry, and waste trichloroethene (TCE) or waste solvents containing TCE. The quantity of each waste stream produced, and the amount of virgin TCE received, are not known. According to a January 1980 Pennsylvania Department of Environmental Resources Waste Discharge Inspection Report, approximately 2 gallons of TCE were used daily.

#### 3.4.1.1 Waste Acidic and Caustic Solutions

Etching of the silicon wafers utilized several acids including hydrofluoric, nitric, acetic, and chromic acids. Caustic solutions were also used and included ammonium hydroxide, potassium hydroxide, sodium hydroxide, and colloidal silica. The acidic and caustic wastes were hauled off-site.

#### 3.4.1.2 Dragout Water and Polishing Slurry

The dragout water and polishing slurry were disposed of on-site. The dragout water, which reportedly contained traces of acids and caustics, was discharged to a drainage ditch. The drainage ditch empties into an unnamed tributary of the Schuylkill River. The polishing slurry, primarily colloidal silica (sand), was disposed of outside the building. The disposal locations are not known.

#### 3.4.1.3 TCE/Solvent Handling Practices

The compound TCE, specifically Reagent Grade - ACS Trichloroethene, was used at the Recticon facility until 1975. The use of reagent-grade TCE was discontinued in 1975 and the manufacturing operations were adjusted accordingly. General mechanical cleaning, which required the use of solvents, was accomplished using "Safety Solvent," "Dupont Freon TF Solvent," isopropyl alcohol, methyl alcohol, and acetone. Reportedly, according to laboratory analyses of samples of Safety Solvent and Dupont Freon TF Solvent, neither solvent contained detectable concentrations of TCE.

TCE and other solvents were shipped and stored in 55-gallon drums. Alcohol was also shipped in 1-gallon containers. The drums and containers were stored in a small room adjacent to the loading dock, in another small room between the polishing room and an exit door near Well 1, in the loading dock area (within the facility), and "outside of the plant." The location of the exterior drum storage area is not known.

Use of TCE was generally restricted to the cutting and polishing areas of the facility. When TCE was needed in these areas, 1-quart dipping vats were filled from the drums and transported. Spent TCE was returned to the drum storage area and stored in drums, which were periodically removed (the name of the waste hauler is not known). The practice of using dipping vats was discontinued when the use of TCE was also discontinued. One-gallon containers were subsequently used to transport solvents within the facility.

The flooring of the storage, cutting, and polishing areas reportedly was not bermed. Also, the cutting and polishing areas contained unbermed, recessed floor drains that were connected to process waste line Nos. 3 and 4.

#### 3.4.2 Allied Steel Facility

The Allied Steel facility generated at least three waste streams: waste SAF-T-SOLVENT, air compressor contact water, and vessel testing water, as reported in PADER Waste Discharge Inspection Reports from November 21, 1978, through August 22, 1980.

#### 3.4.2.1 Waste SAF-T-SOLVENT

According to the August 1979 PADER Waste Discharge Inspection Report, the SAF-T-SOLVENT contained 10 percent TCE, 30 percent 1,1,1-trichloroethane (TCA), and 60 percent high-flash naphtha. In July 1982, the PADER sampled the solvent and found it to contain 38 percent TCE. The solvent was used to clean a generator and other miscellaneous parts and equipment.

The solvent was delivered in 55-gallon drums. A drum storage area for waste solvents was formerly located near the air compressor area. Historically, the waste solvent was spread on the ground surface to control dust (PADER Waste Discharge Inspection Report, August 22, 1980). However, in August 1980, Total Recovery, Inc. was reportedly hauling the waste solvent off-site, as indicated in a PADER site inspection report. The date when hauling of the waste solvent off-site began is not known.

#### 3.4.2.2 Air Compressor Contact Water

In the air compressor area, outside the northern corner of the fabrication shop, is an 8-inch-diameter blow-down pipe. The pipe is connected to the air compressor receiving tank. Reportedly, the water that was diverted through the pipe, approximately 1 gallon per day, contained oil and carbon. Formerly, the water was discharged to the ground surface. By November 1978, the flow was collected in a 5-gallon bucket, as requested by the PADER. The bucket would then be emptied into a 55-gallon drum for off-site disposal.

#### 3.4.2.3 Water Use to Test Fabricated Vessels

To test fabricated vessels for leakage, the vessels were filled with water from Well PW-3. After test completion, the water was discharged to the ground surface.

### 3.5 PREVIOUS INVESTIGATIONS

#### 3.5.1 Former Recticon Facility

In 1979, the PADER collected groundwater samples from wells at the respective facilities and nearby residences. Laboratory analyses indicated the presence of chlorinated solvents, primarily TCE, at concentrations ranging from trace to approximately 3,400 ug/l.

At approximately the same time as the PADER sampling event, Recticon collected groundwater samples from the two on-site wells. The analytical results indicated the presence of TCE in the on-site wells at concentrations of 2,060 ug/l in Well 1 and 1,080 ug/l in Well 2.

In March 1980, the PADER collected a sample of the waste water effluent from the Recticon facility. The sample location is unknown. The analytical results indicated the presence of TCE at a concentration of 1,800 ug/l.

As a result of the PADER groundwater sampling, Recticon voluntarily retained Roy F. Weston, Inc. (Weston) in 1980 to conduct an environmental investigation. The scope

of the Weston investigation included the collection and analysis of groundwater samples, soil samples, sludge samples, and surface water samples. Analysis of soil and sludge samples indicated the presence of TCE at concentrations ranging from 12 to 21,685 ug/kg. TCE was detected in the surface water samples at concentrations ranging from <1 to 229 ug/l. TCE concentrations in groundwater samples collected from the on-site wells were 2,260 ug/l and 979 ug/l for Wells 1 and 2, respectively.

Based on the results of Weston's investigation, Recticon retained Weston in 1981 to remediate the soil in the area of the gravel pad (the area of highest TCE soil concentrations). Weston conducted soil borings in the area and collected subsurface soil samples. TCE was detected at concentrations ranging from 3 to 14 ug/kg at a depth of 10.5 to 11.0 feet below grade. Soil containing TCE at concentrations of 1,000 ug/kg or more was excavated from the area. Approximately 40 cubic yards of soil, extending to a depth of approximately 6.5 feet, were excavated and transported to the Browning-Ferris Industries landfill in Baltimore County, Maryland.

In 1981, Recticon entered into a Consent Order Agreement with the PADER to begin recovering and treating groundwater. Beginning in October 1981, groundwater was recovered from W-1, an on-site production well, at an approximate rate of 26 gallons per minute (gpm). TCE was removed from the water using granular activated carbon (GAC) prior to discharge. TCE concentrations in the groundwater were approximately 2,000 ug/l after 245 days of pumping.

### 3.5.2 Allied Steel Facility

In 1982, Allied discovered that a solvent mixture had been released to the ground surface at the compressor room. In the spring of 1983, SMC Martin Inc. (SMC Martin) was retained by Allied to conduct a hydrogeologic study, the scope of which included soil, surface water, sediment, and groundwater sampling and analysis. TCE was detected in surface soil and sediment samples at concentrations ranging from 0.4 to 900 ug/kg, with the highest concentration detected near the compressor room located at the northwest corner of the fabrication shop. TCE was detected in groundwater samples from the three on-site wells at concentrations ranging from 846 to 2,501 ug/l.

Allied Steel contracted R.E. Wright Associates (REWAI) of Middletown, Pennsylvania, to perform an additional investigation. The investigation involved the collection of soil samples in the vicinity of the compressor room, an area where elevated TCE levels had been detected in soil (SMC Martin, 1983), and additional groundwater sampling. No volatile organic compounds were detected in the soil samples collected by R.E. Wright Associates, Inc. REWAI interpreted the absence of volatile organic compounds as possibly being the result of vertical migration of TCE-bearing solvent without lateral migration; or the soil borings could have been adjacent to, rather than at, the "exact location of the spill"; or complete migration of the solvent through the soil may have occurred due to the lack of clay minerals in the soil.

REWAI collected and analyzed one sample of groundwater from PW-3. The sample contained detectable concentrations of TCE (1,810 ug/l), cis-1,2-dichloroethylene (1,059

ug/l), 1,1-dichloroethylene (4 ug/l), 1,1,1-trichloroethane (3 ug/l), and trans-dichloroethylene (70 ug/l).

REWAI also performed a hydrogeological analysis of groundwater flow in the vicinity of the Allied Steel property. The analysis involved the collection of "static" groundwater elevation data from production wells in the area and water level data collected during an aquifer pumping test on Allied Steel well PW-3. REWAI performed "manual" and computer-assisted groundwater elevation contouring of the pre-pumping "static" water level data. The "manual" contouring indicated a primary direction of groundwater flow to the south in the vicinity of the Allied Steel property, with some groundwater flow toward PW-3 from the north, east, and west. Computer modeling of the same data indicated radial flow to PW-3 from all directions, including the former Recticon and Allied Steel facilities. REWAI interpreted the pre-pumping data as indicating that a permanent cone of depression had formed beneath the Allied Steel facility in response to groundwater withdraw from the Allied Steel production wells. Similar results (radial flow toward PW-3) were indicated during a subsequent 24-hour pump test of the Allied Steel production well PW-3 at a rate of 50 gpm. The locations of the three Allied Steel production wells are shown on Figure 1-4.

Both sets of water level data (pre-pumping and with PW-3 pumping) were based on measurements made from production wells located on the Allied Steel site and other surrounding properties. The REWAI report does not provide sufficient data on the observation wells (well construction details, well depths, screened or open-hole intervals, surveying information, water usage at other facilities) for the interpreted groundwater contours to be evaluated. Groundwater contour maps prepared from water level data collected during this investigation differ from the REWAI groundwater contours. This difference could be related to the lack of activity at the Allied Steel facility. However, the more recent data collected by Dames & Moore covers a broader area; hence, the recent groundwater contour maps are more comprehensive.

### 3.6 POTENTIAL SOURCE AREAS

Based upon information provided in previous hydrogeologic investigation reports, at least two potential source areas of chlorinated solvents exist: the former Recticon facility and the Allied Steel facility. Off-site sources may also exist. The contaminants of concern are TCE, TCA, dichloroethene (DCE), dichloroethane (DCA), tetrachloroethene (PCE), dichloromethane (DCM), chloroform, and toluene, which were detected during PADER analyses in 1980.

#### 3.6.1 Potential On-Site Sources

To discuss the potential sources of contamination, the site descriptions are presented in two sections: the former Recticon facility and the Allied Steel facility.

#### 3.6.1.1 Former Recticon Facility

The potential sources of contamination at the Recticon facility are:

- The manufacturing area
- Areas underlain by waste lines 1, 2, 3, and 4, and their associated settling basins (waste lines 3 and 4 only), and the drainage ditch
- The gravel pad area
- The loading area in the southeast parking lot
- The septic leach field

The Phase I RI work plan was designed to investigate these potential areas of concern.

#### 3.6.1.2 Allied Steel Facility

The primary potential sources of contamination at the Allied Steel facility are:

- The fabrication shop
- The compressor area
- The crane area
- The debris storage areas
- The drainage ditch
- The drainage pipe

The Phase I RI work plan was designed to investigate these potential areas of concern.

#### 3.6.2 Potential Off-Site Source Areas

According to analytical results provided by numerous investigations (summarized in Table 3-1) of groundwater samples from the Parker Ford area, well water at various businesses and residences near the site contains elevated levels of VOCs that may be attributable to solvent use at other facilities. For example, analysis of the groundwater sample from the Gorbert's Auto location (Gorbert's Auto is currently called AutoQuest) revealed toluene (6,000 ug/l), TCE (>1,400 ug/l), and DCE (230 ug/l). The toluene in the AutoQuest well may indicate that AutoQuest is the potential source of the toluene that was detected at significantly lower levels in water samples from the Recticon/Allied Steel site. Gorbert's Auto values represent the

greatest concentration of total volatile organic compounds detected during the PADER's initial water sampling event. In addition, the concentration of TCE detected at Gorbett's Auto was the third highest. VOCs were also detected in groundwater from Lederer's well, with concentrations of TCE at 250 ug/l and 1,1,1-TCA at 36 ug/l. The sources of these isolated TCE occurrences might be domestic solvent used to clean drain lines that discharges to septic tanks.

Two deep bedrock well clusters, DBR-11 and DBR-12, were installed during the Phase II investigation. DBR-12S had 1,400 ug/l and 50 ug/l concentrations of TCE and c-1,2-DCE, respectively. DBR-12D had 270 ug/l and 64 ug/l concentrations of TCE and c-1,2-DCE, respectively. DBR-11S had 6.9J ug/l and 1.8J ug/l concentrations of TCE and c-1,2-DCE, respectively; and DBR-11D had TCE and c-1,2-DCE concentrations of 78 ug/l and 17J ug/l, respectively. The DBR-12 and DBR-11 well clusters are possibly located upgradient of the Recticon and Allied Steel sites, respectively. However, it is possible that pumping W-3 (the production well for the former Recticon facility) has resulted in the DBR-12 cluster being downgradient on an intermittent basis.

The presence of TCE and c-1,2-DCE at higher concentrations in DBR-11D than DBR-11S may also support the contention that an additional upgradient source may be present. This is because the normal trend for the site is to have lower concentrations in the deeper bedrock monitoring wells, rather than greater concentrations.

### 3.7 LAND AND WATER USE

The land surrounding the Recticon/Allied Steel site is sparsely wooded. Industrial and commercial establishments, farms, and single-unit residential areas exist within 0.5 mile of the site. The site is located along Route 724, approximately 2,000 feet west of the Schuylkill River. In the vicinity of the site, the Schuylkill flows to the southeast.

Groundwater is the primary source of water for the businesses and homes surrounding the site. Private wells pump groundwater from the Hammer Creek Formation. The nearest public water and sewerage systems are located in the more densely populated towns of North Coventry, 2.5 miles northwest of the site, and Spring City, 2.5 miles southeast of the site. Spring City is serviced by Citizens Utility Home Water Company. Three supply wells provide water to Citizens Utility Home Water Company. Two of these three wells are located in Montgomery County (Wells 1 and 3) and one is located in Chester County (Well 4). Well 4 is located approximately 0.75 mile southeast of the site in East Vincent Township, near Old Schuylkill Road. This well lies near the confluence of Paddy Creek and the Schuylkill River. Reference No. 10 of USEPA Region III (PSA) Docket Package for the National Priorities List (NPL) designates this well as No. 2149. Southeast of Well 4 (or No. 2149) is a surface water intake along the Schuylkill River. Dames & Moore contacted Citizens Utility Home Water Company (CUHWC) of Royersford, Pennsylvania and verified that the intake is a source of water for CUHWC. This intake is located approximately 1.1 miles southeast of the site and is located across from the Citizens Utility Home Water Company treatment plant.

Two additional supply wells are located on the western edge of Spring City. These wells provide water for the Millers Mobile Home Park and Yeagers Trailer Park.

A review of the PADER Inventory System was performed by Dames & Moore. No additional information was available for wells located near the site or east or southeast of the site.

Sloto (1987) reviewed analytical data on numerous wells located in eastern Chester County, Pennsylvania, as part of a United States Geological Survey study. One well (No. 2435) is identified by Sloto (1989) as Gorbert's Auto (AutoQuest). Analytical data included in Sloto (1987) indicate elevated concentrations of trichloroethene (1,280 ug/l) and dissolved iron (870 ug/l) in water from well No. 2435.

The Schuylkill River in this area meanders as it flows to the southeast. Typically, impoundment basins are situated in the point bars of a meander curve. The impoundment basin nearest the site is located 0.5 mile north along the western bank of the Schuylkill. Other impoundment basins are located in point bars south of Pottstown and north of Spring City. Dames & Moore did not research the ultimate uses of the impoundment basins' water during this investigation; however, the impoundment basins appear to be used for water storage.

### 3.8 CLIMATE

The following information was obtained from United States Geological Survey (USGS) Water-Resources Investigation Report 87-4098, and pertains to the town of Phoenixville, which is located 8 miles southeast of the Recticon/Allied Steel site.

- Mean temperature is 53.1°F (11.7°C)
- Normal temperature for January is 30.1°F (-1.1°C)
- Normal temperature for July is 74.9°F (23.8°C)
- Average rainfall (1850-85, 1913-84) was 44.1 inches, evenly distributed throughout the year

### 3.9 EMERGENCY RESPONSE/REMOVAL ACTION

Rockwell and USEPA have executed an Administrative Order by Consent (AOC), effective May 14, 1990, in which Rockwell agreed, without admitting liability, to perform a Removal Action. This action involves the installation of 7 carbon filtration systems and the monitoring of 22 residential/business water supplies, including the water supplies connected to the filtration systems. Subsequent to the AOC, Rockwell submitted a Removal Action Work Plan on May 23, 1990. These events were precipitated by the data from a water supply survey that was jointly conducted by USEPA and Rockwell in January 1990. A summary of the Removal Action activities to date is presented in Section 4.8.

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AR302000

TABLE 3-1

VOLATILE ORGANIC COMPOUNDS  
GROUND WATER ANALYSES  
RECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA

Well Designation	Date Sampled	Detected Compounds That Were Reported (ug/l)					Reported By
		TCE	1,1,1-TCA	1,1-DCE	1,2-DCE	1,1-DCA	
<u>Recticon</u> <u>Well 1</u>	9/5/79	2,800	NR	NR	NR	NR	PADER
	9/14/79	2,060	NR	NR	NR	NR	Wastex
	9/29/80	2,269	NR	NR	NR	NR	Weston
	1/12/81*	1,417	NR	NR	NR	NR	Weston
	2/24/81	1,600(est) 12	8	500(est) 9			PADER/EPA
	10/16/81*	1,576	NR	NR	546	NR	Weston
	10/30/81*	1,271	NR	NR	655	NR	Weston
	11/6/81*	1,512	NR	NR	519	NR	Weston
	11/25/81*	2,827	NR	NR	553	NR	Weston
	12/11/81*	1,491	NR	NR	193	NR	Weston
	12/23/81*	2,227	NR	NR	255	NR	Weston
	1/8/82*	1,914	NR	NR	306	NR	Weston
	1/27/82*	2,406	NR	NR	492	NR	Weston
	2/9/82*	3,898	NR	NR	771	NR	Weston
	2/17/82*	2,417	NR	NR	380	NR	Weston
	3/8/82*	1,668	NR	NR	6,571	NR	Weston
	3/26/82*	2,418	NR	NR	305	NR	Weston
	4/14/82*	2,392	NR	NR	475	NR	Weston
	4/30/82*	2,141	NR	NR	705	NR	Weston
	5/13/82*	6,496	NR	NR	15	NR	Weston
	5/27/82*	1,644	NR	NR	1,638	NR	Weston
	6/9/82*	600	NR	NR	208	NR	Weston
<u>Recticon</u> <u>Well 2</u>	9/5/79	1,200	NR	NR	NR	NR	PADER
	9/14/79	1,080	NR	NR	NR	NR	Wastex
	9/29/80	979	NR	NR	NR	NR	Weston
	1/12/81	695	NR	NR	NR	NR	Weston
<u>Recticon</u> <u>Facility</u> (Bathroom Tap)	7/6/88	<1	<1	<1 <sup>1</sup>	<1	<1	PADER <sup>10</sup>
<u>Recticon -</u> <u>Effluent</u> <u>Discharge</u>	3/19/80	1,800(est)	NR	NR	>170(est)	2	PADER
<u>Allied Steel</u> <u>PW-3</u>	9/5/79	3,400	NR	NR	NR	NR	PADER
	6/16/80	4,007	25	NR	NR	NR	IEE/REWAI
	6/23/80	4,563	20	NR	NR	NR	IEE/REWAI
	2/23/82	>1,400(est)	15	3	>150(est)	NR	IEE/REWAI
	1/17/85 <sup>2</sup>	2,093	3	5	824	NR	REWAI
	1/8/85	1,810	3	4	1,059 <sup>1</sup>	NR	REWAI <sup>16</sup>
	NR	2,501	NR	NR	NR	NR	SMC Martin
	NR	846	NR	NR	NR	NR	SMC Martin
<u>PW-2</u>	NR	1,242	NR	NR	NR	NR	SMC Martin
<u>Allied Steel</u> <u>Water Tank</u> (dupl.)	7/6/88	1,850	<1	4.9	760 <sup>1</sup>	2.0	PADER <sup>10,11</sup>

AR302001

TABLE 3-1

VOLATILE ORGANIC COMPOUNDS  
GROUND WATER ANALYSES  
RECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA

Well Designation	Date Sampled	Detected Compounds That Were Reported (ug/l)						Reported By
		Toluene	ICE	1,1,1-TCA	DCE	1,2-DCA	DCM	
Amerind- McKissic	12/10/79 2/23/82	NR NR	1 1	NR NR	NR NR	NR NR	NR NR	PADER PADER/Weston
Bell Telephone	NR	NR	12.40	NR	NR	NR	NR	SMC Martin
Chesmont Carpets	NR 1/8/85	NR NR	4.69 7	NR 2	NR 5	NR NR	NR NR	SMC Martin REWAI
Chesmont Carpets (Bathroom Tap)	7/6/88	NR	3.5	3.4	1.2 <sup>9</sup>	NR	NR	PADER <sup>10</sup>
Geleteg	10/23/79 12/6/79**	NR 1	4.9 3	>61 >50	30 NR	15 14	NR 26	PADER PADER
Geleteg (Kitchen Sink)	2/23/82	NR	NR	34	3 <sup>9</sup>	NR	NR	PADER <sup>13</sup>
Geleteg (KS)	8/2/83	NR	3	26	10 <sup>9</sup>	12	3	PADER <sup>14</sup>
Geleteg (KS- Dupl.) (Kitchen Sink)	7/6/88	NR	<1	3.9	1.4 <sup>9</sup>	NR	NR	PADER <sup>10</sup>
Gorbert's Auto 'Auto Quest)	12/10/79 12/23/82 <sup>3</sup>	6,000 NR	>1,400 >450 (est)	NR 4	230 NR	NR NR	NR NR	PADER PADER/Weston <sup>15</sup>
Lederer Greenhouse	10/2/79 <sup>4</sup> 9/29/80	NR NR	6.4 8	NR NR	NR NR	NR NR	NR NR	PADER Weston
(Greenhouse 1)	NR	NR	0.83	NR	NR	NR	NR	SMC Martin
(Greenhouse 2)	NR	NR	3.70	NR	NR	NR	NR	SMC Martin
Work Sink	7/6/88	NR	2.4	<1	<1	NR	NR	PADER <sup>10</sup>
Lederer's Leisure Equipment	12/10/79 1/8/85	NR NR	250 38	36 3	17 2 <sup>1</sup>	NR NR	NR NR	PADER REWAI <sup>17</sup>
(Kawasaki?)	NR	NR	80.0	NR	NR	NR	NR	SMC Martin
(Sporting Goods?)	NR	NR	0.02	NR	NR	NR	NR	SMC Martin
Leisure Equipment Water Tank (dupl.)	7/6/88	NR	33	2.7	4.4 <sup>1</sup>	NR	NR	PADER <sup>10</sup>
Polymeric Systems	9/5/79 9/29/80 2/23/82	NR NR NR	NR 1 Trace	NR NR NR	NR NR NR	NR NR NR	NR NR NR	PADER Weston PADER/ Weston
Polymeric's Quonset Hut (Total Recovery, Inc.)	12/10/79 <sup>5</sup>	48	10	NR	NR	NR	6	PADER
Taylor Industries	10/2/79 9/29/80	NR NR	6.8 3	NR NR	NR NR	NR NR	NR NR	PADER Weston

AR302002

TABLE 3-1

VOLATILE ORGANIC COMPOUNDS  
GROUND WATER ANALYSES  
RECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA

Well Designation	Date Sampled	Detected Compounds That Were Reported (ug/l)					Reported By
		Toluene	ICE	1,1,1-TCA	DCE	1,2-DCA	
Bard Manufacturing	9/18/79 <sup>6</sup>	NR	NR	NR	NR	NR	PADER
Chet's Auto Body Shop	10/2/79 <sup>6</sup>	NR	NR	NR	NR	NR	PADER
Elliot's Radio	10/2/79 <sup>6</sup>	NR	NR	NR	NR	NR	PADER
Meizer Auto	12/10/79 <sup>6</sup>	NR	NR	NR	NR	NR	PADER
Clarence Carl Parker Ford Service Station	1/31/80 <sup>6</sup>	NR	NR	NR	NR	NR	PADER

AR302003

TABLE 3-1

VOLATILE ORGANIC COMPOUNDS  
GROUND WATER ANALYSES  
RECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA

Well Designation	Date Sampled	Detected Compounds That Were Reported (ug/l)							Reported By
		Toluene	ICE	1,1,1-TCA	DCE	DCA	PCE	Chloroform	
Barnard	12/10/79	2	NR	NR	NR	NR	NR	NR	PADER
Brower	9/18/79 <sup>6</sup>	NR	NR	NR	NR	NR	NR	NR	PADER
Burke	NR	NR	0.02	NR	NR	NR	NR	NR	SMC Martin
Choinine, P.	12/5/79 <sup>7</sup>	NR	PT	1	NR	NR	PT	PT	PADER
Dieter	9/18/79 <sup>6</sup>	NR	NR	NR	NR	NR	NR	NR	PADER
DiPasquali	4/2/80	NR	NR	6	NR	NR	NR	NR	PADER
Flynn-Cosgo	10/23/79	NR	NR	NR	NR	NR	NR	4.6	PADER
	12/5/79 <sup>7</sup>	NR	NR	NR	NR	NR	NR	PT	PADER
Hansbury	9/18/79	NR	66	NR	NR	NR	NR	NR	PADER
Hartranft	12/10/79 <sup>6</sup>	NR	NR	NR	NR	NR	NR	NR	PADER
Hendrickson	9/18/79 <sup>6</sup>	NR	NR	NR	NR	NR	NR	NR	PADER
Jones, A.	1/31/80 <sup>6</sup>	NR	NR	NR	NR	NR	NR	NR	PADER
Keifrieder, D. ershner	1/31/80	NR	NR	3	NR	NR	NR	1	PADER
	9/18/79 <sup>6</sup>	NR	NR	NR	NR	NR	NR	NR	PADER
Kessler	12/10/79	NR	NR	7	NR	NR	NR	NR	PADER
Kipple, R.	12/5/79 <sup>7</sup>	NR	NR	NR	NR	NR	NR	PT	PADER
Kolb	12/10/79	NR	2	11	NR	NR	NR	2	PADER
Kurtas, P.	1/31/80 <sup>6</sup>	NR	NR	NR	NR	NR	NR	NR	PADER
Lapish	9/18/79 <sup>6</sup>	NR	NR	NR	NR	NR	NR	NR	PADER
Lederer, K.F.	1/31/80	NR	11	NR	NR	NR	NR	1	PADER
	NR	NR	0.02	NR	NR	NR	NR	NR	SMC Martin
	1/8/85	NT	4	<1	<1	NT	NT	NT	REWAI
Leighton	12/10/79 <sup>6</sup>	NR	NR	NR	NR	NR	NR	NR	PADER
Letter, W.	1/31/80	NR	1	2	NR	NR	1	NR	PADER
March	9/29/80	NR	<1	NR	NR	NR	NR	NR	Weston
Mayler	9/29/80	NR	<1	NR	NR	NR	NR	NR	Weston
	NR	NR	0.02	NR	NR	NR	NR	NR	SMC Martin

AR302004

TABLE 3-1

VOLATILE ORGANIC COMPOUNDS  
GROUND WATER ANALYSES  
RECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA

Well Designation	Date Sampled	Detected Compounds That Were Reported (ug/l)							Reported By
		Toluene	TCE	1,1,1-TCA	DCE	DCA	PCE	Chloroform	
Merkey, H.	1/31/80	NR	NR	4	NR	9	NR	NR	PADER
Miller	12/10/79	NR	NR	12	NR	NR	NR	NR	PADER
	NR	NR	0.02	NR	NR	NR	NR	NR	SMC Martin
Monahan	1/8/85	NT	<1	<1	<1	NT	NT	NT	REWAI
Murray	12/10/79 <sup>6</sup>	NR	NR	NR	NR	NR	NR	NR	PADER
Nagy, D.	1/31/80	2	NR	NR	NR	NR	NR	NR	PADER
Noble, W.	1/31/80	NR	2	12	NR	3	NR	1	PADER
Overfield	12/10/79	NR	9	NR	NR	NR	NR	NR	PADER
	NR	NR	1.48	NR	NR	NR	NR	NR	SMC Martin
Paney, L.	1/31/80	NR	NR	3	NR	4	NR	NR	PADER
Peck	12/10/79	NR	NR	25	NR	Detected	NR	NR	PADER
Peronteau	10/23/79	NR	15	26	NR	NR	NR	3.5	PADER
	12/5/79	NR	7	23	NR	NR	13	PT	PADER
Plumley, A.	1/31/80 <sup>6</sup>	NR	NR	NR	NR	NR	NR	NR	PADER
Reinhart	12/10/79 <sup>6</sup>	NR	NR	NR	NR	NR	NR	NR	PADER
Roberts	9/18/79 <sup>6</sup>	NR	NR	NR	NR	NR	NR	NR	PADER
Rudick's Welding and Machine	1/31/80	NR	NR	NR	NR	NR	2	NR	PADER
Schurrs	10/23/79	NR	NR	NR	NR	NR	NR	14	PADER
	12/5/79	NR	NR	NR	NR	NR	NR	PT	PADER
Shannon	12/10/79 <sup>5</sup>	NR	NR	NR	NR	NR	NR	NR	PADER
Staiffer	1/31/80	3	NR	NR	NR	NR	NR	2	PADER
Stockholm	9/18/79 <sup>6</sup>	NR	NR	NR	NR	NR	NR	NR	PADER
Strutynski	9/18/79 <sup>6</sup>	NR	NR	NR	NR	NR	NR	NR	PADER
Swavely, N.	1/31/80	NR	NR	NR	NR	NR	1	NR	PADER
Taylor	9/29/80	NR	<1	NR	NR	NR	NR	NR	Weston
Texter	10/23/79	NR	2.3	10	NR	NR	NR	14	PADER
	12/6/79 <sup>8</sup>	NR	2	8	NR	NR	NR	NR	PADER

AR302005

TABLE 3-1

VOLATILE ORGANIC COMPOUNDS  
GROUND WATER ANALYSES  
RECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA

Well Designation	Date Sampled	Detected Compounds That Were Reported (ug/l)							Reported By
		Toluene	TCE	1,1,1-TCA	DCE	DCA	PCE	Chloroform	
Unknown (Linfield Rd.)	12/10/79 <sup>6</sup>	NR	NR	NR	NR	NR	NR	NR	PADER
Weaver	12/10/79 <sup>6</sup>	NR	NR	NR	NR	NR	NR	NR	PADER
Wiard	12/10/79 <sup>6</sup>	NR	NR	NR	NR	NR	NR	NR	PADER
Williamson	12/10/79 <sup>6</sup>	NR	NR	NR	NR	NR	NR	NR	PADER

Explanation:

- \* = Ground water was sampled during water treatment with granular activated carbon (GAC). The analytical results are for water samples collected prior to GAC treatment.
- \*\* = Possible traces of MIBK and other volatile organic compounds (VOCs) were detected.
- NT = Not Tested
- NR = Not Reported
- PT = Possible trace
- TCE = Trichloroethene
- 1,1,1-TCA = 1,1,1-Trichloroethane
- 1,1-DCA = 1,1-dichloroethane
- 1,2-DCA = 1,2-dichloroethane
- PCE = tetrachloroethene
- DCM = dichloromethane
- DCE = dichloroethene

Notes:

- 1 - The reported analysis was for cis-1,2-DCE.
- 2 - The results reported were averaged values for three samples collected within 24 hours.
- 3 - 1,2-DCE also detected above trace levels.
- 4 - 17 ppb of another VOC was detected, but the report was illegible.
- 5 - Possible pentane.
- 6 - As reported, the results are that no VOCs were detected; however, the exact VOCs that were not detected are not clear.
- 7 - Only possible traces (PT) of VOCs were detected.
- 8 - Trace of tetrahydrofuran (furan).
- 9 - Reported analysis was for 1,1-DCE.
- 10- PADER laboratory reports are included in Appendix A-5. It is not known if the samples collected were affected by any on-line treatment systems such as carbon filters.
- 11- Vinyl chloride also reported at 2.2 ug/l.
- 12- Reported analysis was for 1,1-DCA.
- 13- Additional compounds detected include 1,1-DCA (5 ug/l) and 1,2-DCE (10 ug/l).
- 14- Additional compounds detected include 1,2-DCE (11 ug/l) and PCE (3 ug/l).
- 15- Additional compound detected is 1,2-DCE (>250 ug/l, estimate).
- 16- Additional compound detected is trans-1,2-DCE (70 ug/l).
- 17- Additional compound detected is 1,1-DCE (5 ug/l).

Sources:

- A. S.M.C. Martin, Inc., 1984, Hydrogeological Report of the Allied Steel Site in Parkerford, Pennsylvania.
- B. PADER, November 8, 1979, Letter from PADER to Allied Steel (Enclosure of 1979-1980 Water Sampling in Parkerford, Pennsylvania).
- C. Wastex Industries, Inc., September 17, 1979, Analytical Laboratory Report for Rockwell International (Recticon).
- D. Weston, Inc., November 21, 1980, Hydrogeological Survey of the Recticon Facility in Parkerford, Pennsylvania.
- E. Weston, Inc., February 12, 1981, Letter Report.
- F. Wright Associates, Inc., May 1985, Report on Groundwater Contamination by Organic Solvents at Allied Steel Corporation's Parkerford, Pennsylvania Manufacturing Facility.
- G. EPA, 1989, Preliminary Health Assessment for Recticon/Allied Steel Site in Parkerford, Pennsylvania, 6 pp.

0979t

AR302006

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AR302007



0 1000 2000 3000 FEET

GRAPHIC SCALE

CONTOUR INTERVAL = 10 FEET

REFERENCE:

A PORTION OF USGS 7.5 MINUTE TOPOGRAPHIC MAP; PHOENIXVILLE QUADRANGLE, PENNSYLVANIA; 1955, PHOTOREVISED 1983.

TITLE

# SITE LOCATION MAP

PROJECT

RECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA



**Dames & Moore**  
WILLOW GROVE, PENNSYLVANIA

SCALE

AS SHOWN

DWN. BY

R.G.B.

JOB NO.

10839-047

DATE

11-21-91

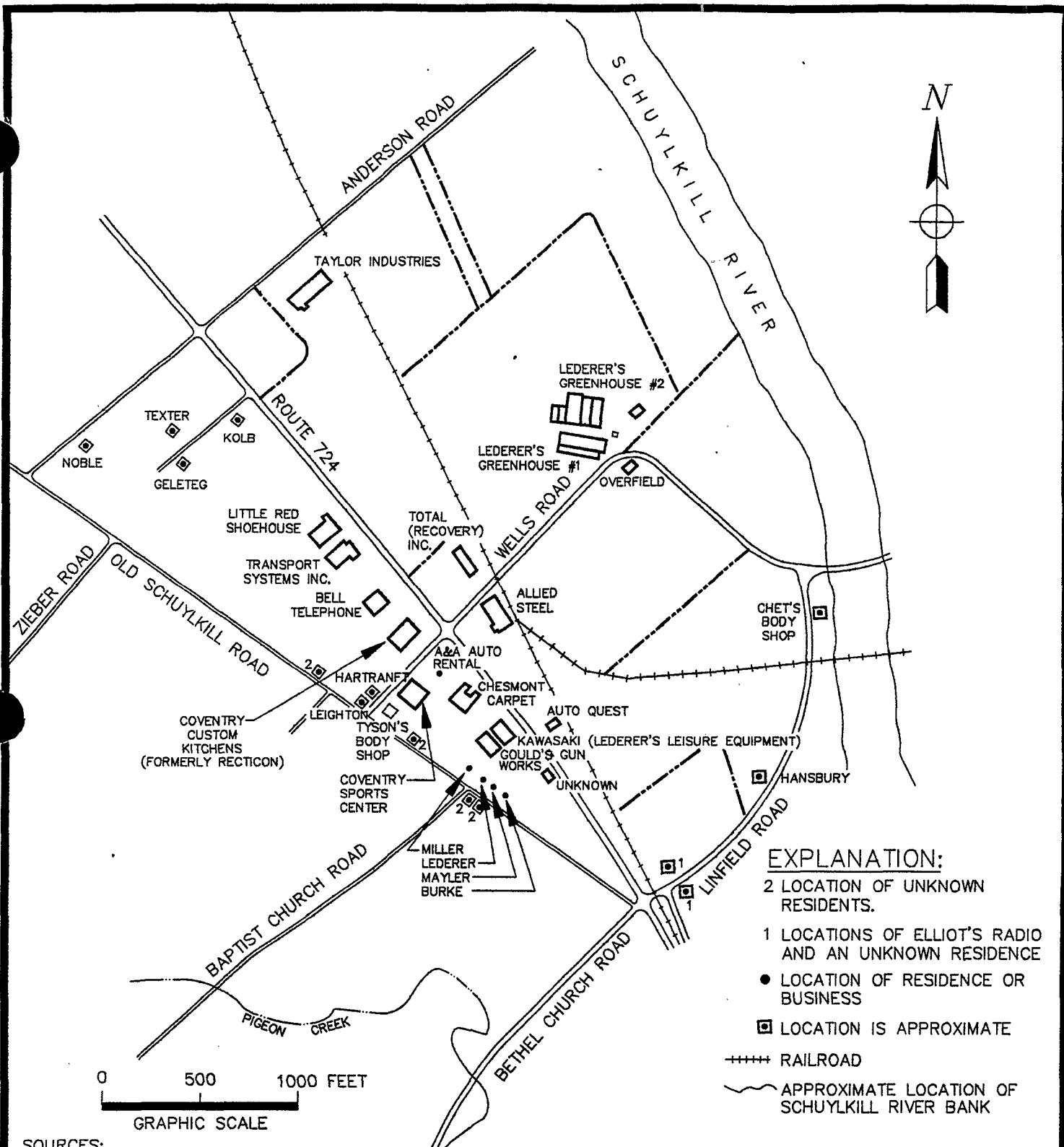
APPR. BY

R.T.H.

FIG. NO.

3 1

AR302008



#### SOURCES:

- THE PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL RESOURCES' RECORDS FOR THEIR 1979 AND 1980 WATER SAMPLING IN THE PARKER FORD AREA.
- THE S.M.C. MARTIN HYDROGEOLOGICAL REPORT, DATED MARCH, 1984, FIGURE 2 AND TABLE 3.
- THE 1985 AERIAL PHOTOGRAPH COLLECTED BY THE DELAWARE VALLEY REGIONAL PLANNING COMMISSION.

#### TITLE

## SITE VICINITY MAP

#### PROJECT

RECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA



**Dames & Moore**

WILLOW GROVE, PENNSYLVANIA

#### SCALE

AS SHOWN

#### DWN. BY

EM<sup>2</sup>

#### JOB NO.

10839-047

#### DATE

11/30/89

#### APPR. BY

LH

#### FIG. NO.

3-2

AR302009

**SOURCE:**

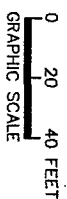
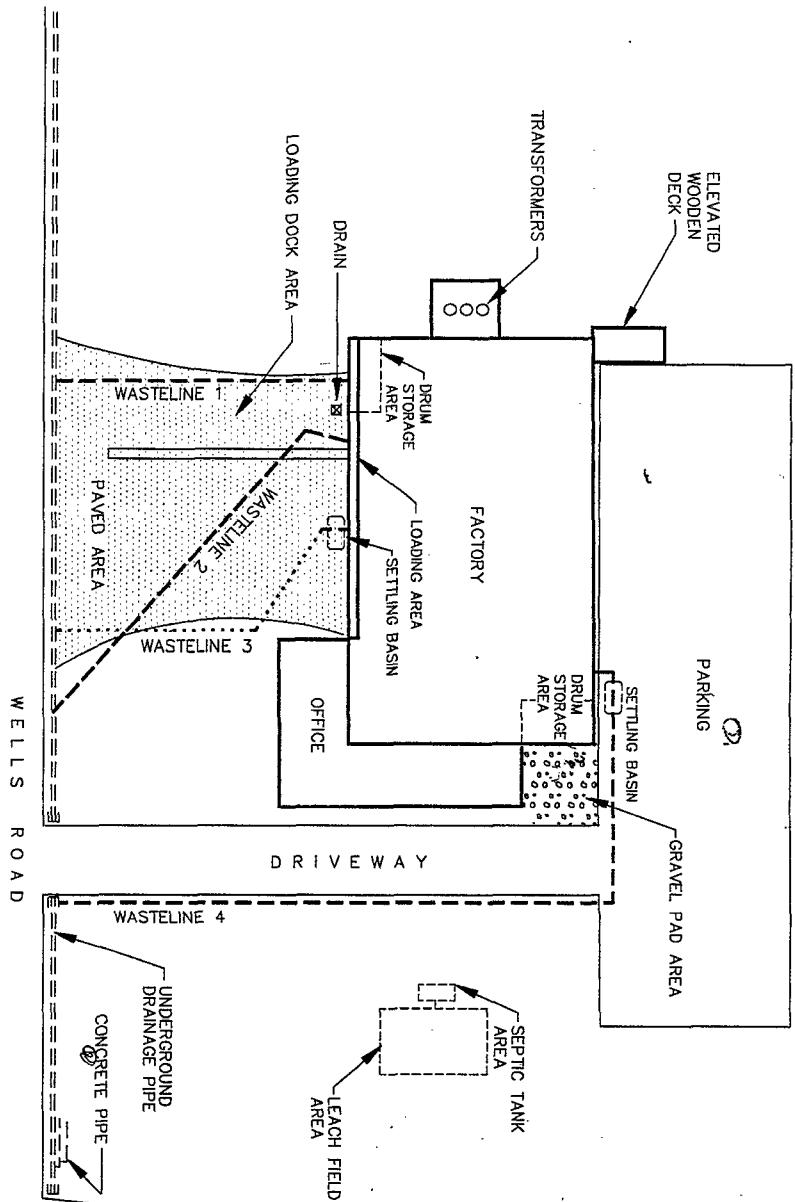
BASE MAP IS DERIVED FROM THE ROY F. WESTON, INC.  
HYDROGEOLOGICAL SURVEY REPORT, NOVEMBER 21, 1980.


**NOTES:**

1. THE LOCATION AND DIMENSIONS OF THE SEPTIC SYSTEM ARE APPROXIMATE.
2. THE LOCATION OF THE REPORTED OUTSIDE DRUM STORAGE AREA IS UNKNOWN.

**EXPLANATION:**

- WASTELINE (EXISTING)
- ..... WASTELINE (REMOVED)
- ☒ DRAIN



TITLE FORMER RECTICON FACILITY MAP			
PROJECT RECTICON/ALLIED STEEL SITE PARKER FORD, PENNSYLVANIA			
 <b>Dames &amp; Moore</b> <small>WILLOW GROVE, PENNSYLVANIA</small>			
SCALE AS SHOWN	DATE 11/28/89	DRW. BY EM2	FIG. NO. 3.3
APPR. BY LH		KOB NO. 10839-047	

41002010

CONCRETE  
PIPE

ROUTE 724

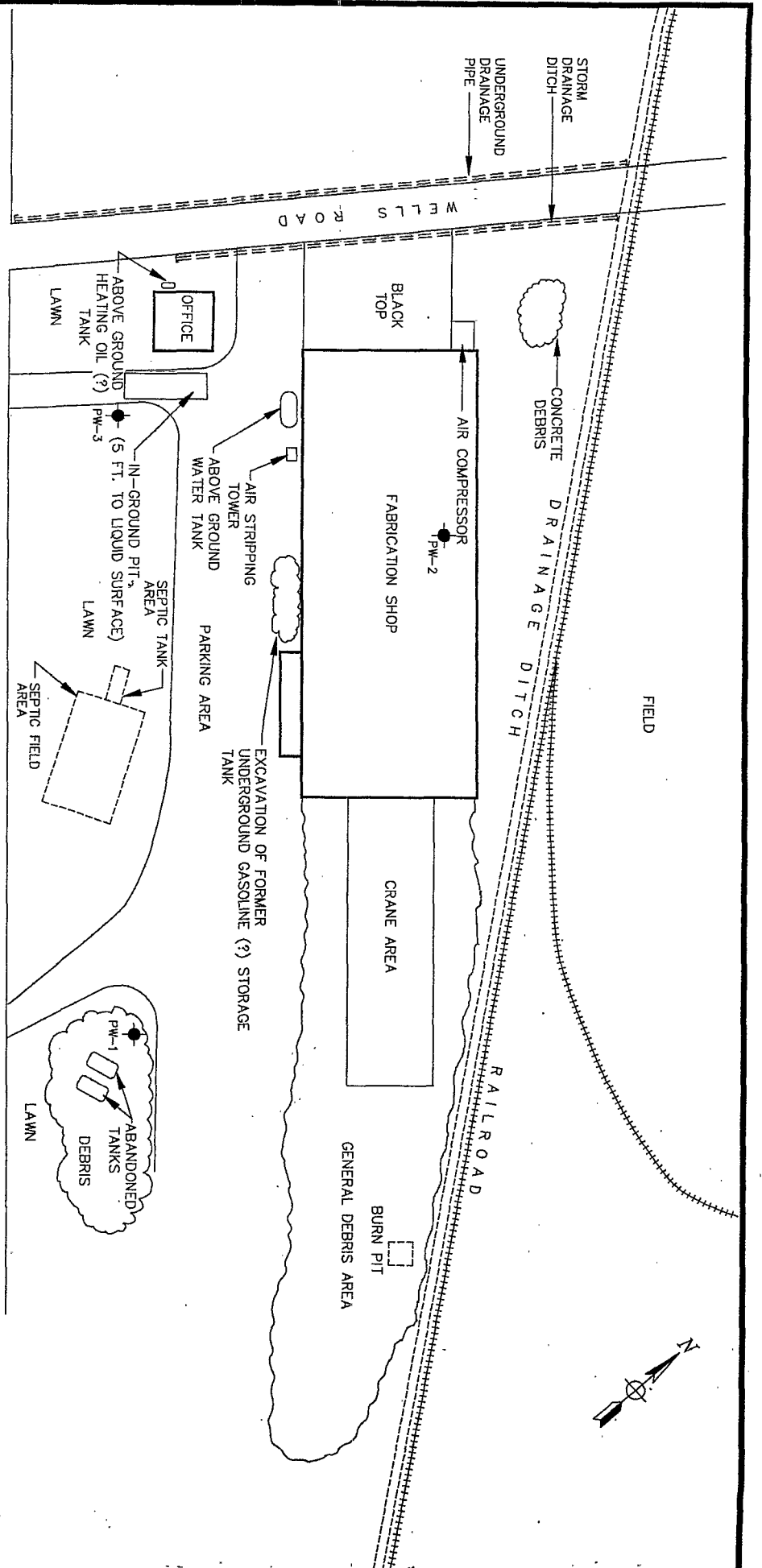
0 20 40 FEET  
GRAPHIC SCALE

SOURCE:  
BASE MAP IS DERIVED FROM THE S.M.C. MARTIN, INC.  
HYDROGEOLOGICAL STUDY REPORT, MARCH, 1984.

NOTES:  
1. THE LOCATION AND DIMENSIONS OF THE SEPTIC SYSTEM ARE APPROXIMATE.  
2. WASTE SOLVENT DRUMS WERE REPORTED TO BE STORED NEAR AIR  
COMPRESSOR AREA. (EPA/PRELIMINARY ASSESSMENT, 1982)

AR302011

TITLE			
ALLIED STEEL FACILITY MAP			
PROJECT			
RECTICON/ALLIED STEEL SITE PARKER FORD, PENNSYLVANIA			
SCALE AS SHOWN			
DATE 11/28/89			
DAMES & MOORE			
WILLOW GROVE, PENNSYLVANIA			
DRA. BY E.W.2			
APPR. BY LH			
JOB NO. 10839-047			
FILE NO. 3.4			



AR302012

#### 4.0 PHASE I REMEDIAL INVESTIGATION AND RESULTS

The scope of work for this investigation was proposed in Dames & Moore's Phase I RI/FS work plan of December 3, 1990 and Dames & Moore's Phase II RI work plan of May 13, 1992. The Phase I work plan was presented as a comprehensive document that included options for various phases of the RI/FS. The purpose of the Phase I remedial investigation was to collect sufficient information to characterize the site with regard to its potential hazards; evaluate the need for and extent of remedial actions; and identify additional data needs to assist in the evaluation of remedial alternatives; or, if sufficient data were collected, to complete the assessment of feasible remedial alternatives. The Phase II RI involved further characterization of the bedrock aquifer. This report presents the results of the Phase I and II RI, and the results of the baseline risk assessment (Appendix W). This section presents the Phase I RI results and Section 5.0 presents the Phase II RI results. The feasibility study for this investigation has been initiated; however, presentation of the results of this study will not be made until December 24, 1992.

#### 4.1 PROJECT PLANNING AND ORGANIZATION

This task involved preparation of the RI/FS work plan, the site-specific Quality Assurance Project Plan (including Laboratory QAPP and Project Management Plan), and the site-specific Health and Safety Plan. These plans were submitted to USEPA for approval prior to initiation of the RI. The plans were approved by USEPA in conjunction with PADER on January 19, 1991.

The RI/FS is being performed by Rockwell International Corporation under the guidance of USEPA Region III. USEPA is the lead regulatory agency. PADER is providing support to USEPA with regard to this project.

#### 4.2 SURFACE SOIL AND SURFACE WATER

A review of historic operational practices at the Recticon facility indicates that waste water was occasionally discharged to surface drainage ditches. Previous sampling results revealed the presence of chlorinated hydrocarbons in culverts; TCE concentrations ranged from less than 1 ug/l to 229 ug/l.

To evaluate the presence of chlorinated hydrocarbons and metals in the surface soil and surface water, five surface soil/sediment samples and two surface water samples were collected at selected locations. Figure 4-1 presents the sampling locations. Sample numbers were assigned to the surface soil samples along with an alpha label, either "A" or "R," depending on the relative distance of the sampling location from the Allied Steel or Recticon facility. Samples collected at or near the former Recticon facility were assigned an "R" designation. Samples collected at or near the Allied Steel facility received an "A" designation. Background surface soil samples RSS-7-A, RSS-7-B, and RSS-7-C were collected at an upgradient location on the former Recticon property. The sample collection points were selected based on Dames & Moore's current understanding of site conditions and actual field conditions determined by USEPA and Dames & Moore personnel during a site visit on May 22, 1990. One

sample proposed in the Phase I work plan (SS-1) was not collected due to the absence of surface soil at this location. An empty concrete catch basin was present at this location.

The surface soil and surface water samples were analyzed for Target Compound List (TCL) volatile organics, semivolatile organics, and Target Analyte List (TAL) metals and cyanide using Contract Laboratory Program (CLP) protocol (see Table 4-1 for list of parameters). Surface water and surface soil samples were also analyzed in the field and in the laboratory for the parameters listed in Table 4-2. Sampling was performed in accordance with the procedures presented in the Phase I work plan and reproduced in Appendix A.

#### 4.2.1 Background Surface Soil Samples

Table 4-3 presents a summary of the analytical results for the surface soil samples; summary sheets from the analytical laboratory (Enseco Laboratories of Somerset, New Jersey) are presented in Appendix B. The results of geotechnical analyses, performed by the Dames & Moore geotechnical laboratory in Salt Lake City, Utah, are discussed in Section 4.2.2.4 of this report. The geotechnical laboratory reports are also presented in Appendix B.

##### 4.2.1.1 Volatile Organic Compounds

Methylene chloride was detected in samples R/SS-7A, R/SS-7B, and R/SS-7C at concentrations of 6 ug/kg, 5 ug/kg, and 5 ug/kg, respectively. These concentrations are estimated values because they are below the quantitation limit for the sample analyses. Similar levels were also detected in the method blank samples, suggesting that methylene chloride in the background surface soil samples is a laboratory artifact.

Acetone was detected in sample R/SS-7C at a concentration of 18 ug/kg and at similar levels in the field blank samples. Hence, the level of acetone present in R/SS-7C is likely the result of a laboratory or field artifact. No other volatile organics were detected in the background surface soil samples.

##### 4.2.1.2 Semivolatile Organic Compounds

Background surface soil sample R/SS-7A contained the highest total semivolatile organic concentration (2,163 ug/kg) compared to the remaining background samples (382 ug/kg in R/SS-7B and no detect in R/SS-7C). The semivolatile compounds detected in R/SS-7A included benzoic acid (250 ug/kg), acenaphthylene (140 ug/kg), phenanthrene (94 ug/kg), anthracene (77 ug/kg), fluoranthene (270 ug/kg), benzo(a)anthracene (200 ug/kg), bis(2-ethylhexyl)phthalate (72 ug/kg), chrysene (250 ug/kg), benzo(b)fluoranthene, and benzo(a)pyrene. The concentrations of semivolatile organic parameters are considered to be relatively low and probably related to the sites proximity to asphalt paving on Route 724 and also Wells Road. The concentrations of semivolatile compounds detected in R/SS-7A are generally estimated values (qualified with a "J"). The concentrations are considered estimated because the detected semivolatile compounds were present at concentrations below the contract-required quantification limit for the analytical method. The semivolatile data for the surface soil samples were qualified during data validation as "biased low." The biased-low qualifier indicates that the samples were analyzed at a time that exceeded method holding times. As

discussed in the data validation report, semivolatile organic compounds tend to be persistent. Hence, the biased-low qualifier does not necessarily indicate that the data are unreliable.

#### 4.2.1.3 Inorganic Parameters

Antimony, cadmium, mercury, selenium, silver, sodium, thallium, and cyanide were not detected in the background surface soil samples. The inorganic parameters detected in the background surface soil samples included aluminum (6,290 to 11,600 mg/kg), arsenic (2.6 mg/kg), barium (92.5 to 139 mg/kg), beryllium (<0.52 mg/kg to 0.83 mg/kg), calcium (630 to 3,620 mg/kg), chromium (9.5 to 14.8 mg/kg), copper (4.3 to 20.8 mg/kg), iron (11,600 to 17,000 mg/kg), lead (30.2 to 74.0 mg/kg), magnesium (1,070 to 3,390 mg/kg), manganese (642 to 1,310 mg/kg), nickel (10.5 to 15.1 mg/kg), potassium (639 to 1,070 mg/kg), vanadium (16.9 to 27.1 mg/kg), and zinc (38.0 to 92.1 mg/kg). Total organic carbon concentrations in the background surface soil samples ranged from 1.7 to 2.1 mg/kg.

#### 4.2.2 Surface Soil Samples

##### 4.2.2.1 Volatile Organic Compounds

The volatile organic compounds (VOCs) detected in the surface soil samples included methylene chloride (3 to 11 ug/kg), acetone (18 to 140 ug/kg), and trichloroethene (2 to 5 ug/kg). The highest concentration of methylene chloride, 11 ug/kg, was detected in sample A/SS-6. The 11-ug/kg concentration is probably a laboratory artifact related to cleaning of glassware, as supported by the 1-ug/kg concentration in the field blank. The highest concentration of acetone (140 ug/kg) was detected in sample R/SS-2. Although acetone was detected in a trip blank sample at a concentration of 7 ug/l, the 140-ug/kg concentration of acetone in R/SS-2 cannot be entirely attributed to laboratory or sampling equipment artifacts. However, the 140-ug/kg concentration does not appear to be indicative of a significant soil impact. The highest concentration of trichloroethene, 5 ug/kg, was detected in sample A/SS-6. The 5-ug/kg concentration of TCE does not appear to represent a significant source area. In addition, the concentrations of volatile organics were sporadic and, hence, not representative of a single continuous source. Therefore, the volatile organic compound concentrations in the surface soil samples are not an environmental concern.

##### 4.2.2.2 Semivolatile Organic Compounds

The semivolatile organic compounds detected in the surface soil samples included naphthalene (concentrations ranged from not detected to 400 ug/kg), 2-methyl naphthalene (not detected to 700 ug/kg), acenaphthalene (230 ug/kg to 350 ug/kg), dibenzofuran (not detected to 300 ug/kg), benzoic acid (not detected to 250 ug/kg), phenanthrene (290 ug/kg to 1,600 ug/kg), anthracene (150 ug/kg to 270 ug/kg), di-n-butyl phthalate (73 ug/kg to 1,100 ug/kg), fluoranthene (720 ug/kg to 1,600 ug/kg), pyrene (100 ug/kg to 1,600 ug/kg), butylbenzyl phthalate (92 ug/kg to 950 ug/kg), 3,3'-dichlorobenzidine (not detected to 1,900 ug/kg), benzo(a)anthracene (300 ug/kg to 1,000 ug/kg), bis(2-ethylhexyl) phthalate (220 ug/kg to 930 ug/kg), chrysene (520 ug/kg to 1,000 ug/kg), benzo(b) fluoranthene (1,200 ug/kg to 2,000 ug/kg), benzo(k)fluoranthene (550 ug/kg to 1,100 ug/kg), benzo(a)pyrene (490 ug/kg to 1,200 ug/kg), indeno(1,2,3-cd)pyrene (250 ug/kg to 1,100 ug/kg), dibenzo(a,h)anthracene (63 ug/kg)

to 1,100 ug/kg), and benzo(g,h,i)perylene (250 ug/kg to 810 ug/kg). No acid extractable semivolatile organic compounds were detected.

The highest total semivolatile organic compound (SVOC) concentration (11,980 ug/kg) was detected in A/SS-4. The compounds detected in A/SS-4 include acenaphthylene (240 ug/kg), phenanthrene (650 ug/kg), anthracene (220 ug/kg), fluoranthene (1,600 ug/kg), pyrene (1,600 ug/kg), butylbenzylphthalate (170 ug/kg), benzo(a)anthracene (770 ug/kg), bis(2-ethylhexyl)phthalate (930 ug/kg), chrysene (990 ug/kg), benzo(b)fluoranthene (2,000 ug/kg), benzo(a)pyrene (900 ug/kg), indeno(1,2,3-cd)pyrene, and benzo(g,h,i)perylene (810 ug/kg).

The remaining surface soil samples, R/SS-2, A/SS-3, A/SS-5, and A/SS-6, contained total semivolatile concentrations of 10,381 ug/kg, 5,553 ug/kg, 8,121 ug/kg, and 8,473 ug/kg, respectively, with similar semivolatile compounds detected. All of the semivolatile compounds detected in surface soil samples are base/neutral extractable compounds. The base/neutral extractable compound concentrations are relatively low and sporadic, indicating that no single or continuous source of semivolatile compounds is present in the soil on-site. The risk assessment (Appendix W) identified the polycyclic aromatic hydrocarbon concentrations of the semivolatile organic compound scan as representative of a cancer risk greater than  $10^{-6}$ . The surface sediment samples were collected from drainage ditches up and downgradient of the site that receive runoff from road surfaces. We believe that the PAH concentrations are representative of tar derivatives from the road surface.

#### 4.2.2.3 Inorganic Parameters

The ranges of inorganic parameters detected in the surface soil samples are similar to the levels detected in the background samples (R/SS-7A, R/SS-7B, and R/SS-7C).

The concentrations of aluminum (8,450 to 11,500 mg/kg), iron (14,300 to 31,000 mg/kg), manganese (356 to 1,500), barium (93.7 to 178 mg/kg), calcium (4,240 to 16,100 mg/kg), chromium (19.9 to 80.7 mg/kg), lead (57.9 to 151 mg/kg), magnesium (2,140 to 5,980 mg/kg), potassium (999 to 1,180 mg/kg), nickel (15.9 to 28.7 mg/kg), cobalt (11.9 to 15.7 mg/kg), copper (43.3 to 211 mg/kg), beryllium (not detected to 2.8 mg/kg), and arsenic (2.0 to 6.0 mg/kg) are consistent with the elemental concentrations anticipated for a soil profile developed on red shale. Antimony, silver, sodium, mercury, thallium, and cyanide were not detected in the surface soil samples.

Copper and zinc were detected in SS-4 and SS-6 (downgradient of the Allied Steel Property) at concentrations 5 to 10 times greater than those detected in the background samples. Although it is possible that the copper and zinc concentrations detected in SS-6 are related to site activities, it appears that the elevated levels are equally likely to be related to road surface runoff of Route 724. The background sample locations were collected in the vicinity of a small residential road and only runoff from that road impacts the ditch in the background sample location. The downgradient sample receives drainage from Route 724, a larger highway. The source of copper and zinc in road surface runoff can be related to tire wear. Hawley (1987) indicates that copper (listed under copper sulfate in Hawley, 1987) and zinc (under vulcanization in Hawley, 1987) are commonly used in the vulcanization process for rubber and tires.

#### 4.2.2.4 Geotechnical Analyses

One sample was collected at each of the surface soil locations for geotechnical grain-size analyses (sieve and hydrometer analyses). The samples were analyzed at the Dames & Moore geotechnical laboratory in Salt Lake City, Utah. The geotechnical laboratory results are presented in Appendix B-1. The surface soil samples are classified as:

R/SS-7A, 7B, 7C	-	Sandy silt, trace clay and gravel
R/SS-2	-	Gravelly sand, trace silt
R/SS-3	-	Sandy silt, trace clay
A/SS-4	-	Silty sand, trace clay and gravel
A/SS-5	-	Silty sand, trace clay and gravel
A/SS-6	-	Sandy silt, trace clay

#### 4.2.3 Surface Water

The analytical results for the two surface water samples collected during this investigation are presented in Appendix C, with the data validation report for these samples. The analytical results for the surface water samples are presented in Table 4-4. Surface water sample SW-1 was collected in a drainage area in the vicinity of surface soil sample A/SS-3. Surface water sample SW-2 was collected in a drainage ditch in the vicinity of surface soil sample A/SS-4. SW-1 was located in an area upgradient of the Allied Steel site along the railroad tracks, which lie east of the Allied Steel site (Figure 4-1). SW-2 was located in the northern portion of the Allied Steel property.

##### 4.2.3.1 Volatile Organic Compounds

Acetone was detected in SW-1 (14 ug/l) and SW-2 (8 ug/l); however, similar levels were detected in the field blank and trip blank samples.

##### 4.2.3.2 Semivolatile Organic Compounds

Diethyl phthalate and bis(2-ethylhexyl)phthalate were detected in SW-1 at concentrations of 1 ug/l. The 1-ug/l concentration for both compounds is an estimated value because it was below the quantitation limit for the sample analysis.

##### 4.2.3.3 Inorganic Parameters

The surface water samples, SW-1 and SW-2, were submitted as filtered and unfiltered samples. Antimony, arsenic, beryllium, cobalt, mercury, nickel, silver, thallium, and cyanide were not detected above detection limits in any of the surface water samples (filtered and unfiltered; cyanide was submitted as an unfiltered sample only). Table 4-4 summarizes the inorganic parameters that were detected in the surface water samples. SW-1 and SW-2 were collected at locations upgradient of the Allied Steel facility. Sample SW-2 was collected downgradient of the former Recticon facility (Figure 4-1).

### 4.3 SOIL VAPOR SURVEY

The purpose of this task was to scan for potential source areas of chlorinated hydrocarbons, using the relatively rapid mechanism of a soil vapor survey to provide sufficient information to select soil boring locations. The soil vapor survey was performed using a grid system established for each of the sites. A total of 110 soil vapor samples were collected and analyzed in the field by Tracer Research Corporation of Princeton, New Jersey.

A total of 56 sampling locations at the former Recticon facility were evaluated. Figure 4-2 illustrates the location of each point. Sampling locations included areas around the immediate vicinity of the plant building and septic system.

At the Allied Steel facility, a total of 54 sampling points were evaluated. The sampling points were concentrated in the immediate plant area. Figure 4-3 illustrates the locations of the sampling points. Additionally, sampling points were evaluated around the former truck scale, septic leach field, abandoned debris area, and burn pit.

The soil vapor survey procedures used for this investigation are presented in Appendix A, with the field gas chromatograph analytical results. The soil vapor survey results are discussed in subsections 4.3.1 and 4.3.2 of this report.

The soil vapor survey was performed from January 17 through January 25, 1991, by Tracer Research Corporation (Tracer). Appendix D presents the condensed data table prepared by Tracer for the soil vapor study analytical results, the soil vapor survey field and quality assurance procedures, and Dames & Moore's quality assurance review of the raw analytical data. Dames & Moore's review of the Tracer chromatograms revealed misidentified compounds and concentrations that were reported inaccurately. Therefore, the Tracer condensed data table reflects some "pencil" corrections.

The soil vapor samples were analyzed in the field using a gas chromatograph for the following compounds:

Trichloroethene (TCE)	Ethylbenzene
Tetrachloroethene (PCE)	Xylenes
1,1,1-Trichloroethane (TCA)	Carbon Tetrachloride
Benzene	Chloroform
Toluene	Vinyl Chloride

The purpose of the soil vapor study was to select soil boring sampling locations by identifying areas with elevated chlorinated hydrocarbon concentrations in the soil vapor. To aid in the identification of soil boring locations, Dames & Moore plotted the soil vapor data onto isoconcentration maps. The gas chromatograph equipment utilized had apparent sensitivities as low as 0.0001 ug/l. However, the limit of reproducibility for soil vapor data is anticipated to be approximately 0.1 ug/l. Therefore, the isoconcentration maps were prepared for those compounds detected above 0.1 ug/l. It should be noted that soil vapor sample locations R/B15, R/D15, R/H11, AS/E19C, AS/F13, and AS/K15 were not sampled due to shallow subsurface obstructions or surface water saturated conditions.

#### 4.3.1 Former Recticon Facility

Figures 4-4, 4-5, and 4-6 summarize the TCE, TCA, and toluene soil vapor data, respectively, for the former Recticon facility. TCE, TCA, and toluene, were detected above a concentration of 0.1 ug/l in the soil vapor samples collected at the former Recticon facility. These compounds represent the compounds with highest detected levels on the Recticon facility.

TCE was detected in soil vapor samples R/A7 (170 ug/l), R/A7A (50 ug/l), R/G2 (6.0 ug/l), R/H3 (6.0 ug/l), and R/L9 (2.0 ug/l). TCA was detected in soil vapor samples R/G2 (0.2 ug/l) and R/H3 (1.0 ug/l). Toluene was detected in R/A7 (18.0 ug/l), R/C3 (2.0 ug/l), R/J5 (1.0 ug/l), R/D13 (1.0 ug/l), R/F13 (1.0 ug/l), R/F13B (1.0 ug/l), R/F15 (1.0 ug/l), and R/D1 (1.0 ug/l).

The following soil boring sample locations at the former Recticon facility were selected based on the TCE soil vapor results.

- RA7
- RA7A
- R/G2
- R/H3
- R/C9

Although R/L9 had a relatively low TCE soil vapor concentration, its location was selected in order to test the sensitivity of the soil vapor method. R/A7A contained the highest toluene concentration (18 ug/l); therefore, the R/A7A soil vapor location was selected to evaluate the sensitivity of the toluene soil vapor analyses.

#### 4.3.2 Allied Steel Facility

Figures 4-7 and 4-8 summarize the TCE and toluene soil vapor data, respectively, for the Allied Steel facility. Two of the greatest concentrations of TCE on the Allied Steel facility were detected in soil vapor samples AS/D11 (TCE at 0.3 ug/l) and AS/C5 (TCE at 0.2 ug/l).

TCE was detected in A/H2 (0.4 ug/l), A/C5 (0.2 ug/l), A/C11 (0.3 ug/l), A/K10 (0.1 ug/l), A/D11 (0.3 ug/l), A/I3 (0.8 ug/l), and A/L-9 (0.03 ug/l). Toluene was detected in A/A1 (5 ug/l), A/G3 (10 ug/l), A/G5 (10 ug/l), and A/E1 (4 ug/l).

Based on the TCE soil vapor results, the following soil sampling locations were selected:

- A/H2
- A/C5
- A/C11
- A/K9

Although A/K9 contained a relatively low concentration of TCE (0.03 ug/l), this location was selected to evaluate the sensitivity of the soil vapor study. Although toluene was detected in soil vapor samples on the Allied Steel site, consideration of soil borings in the vicinity of the elevated toluene concentrations was postponed until receipt of the soil sampling results for R/A7A.

#### 4.4 SOIL BORING PROGRAM

A total of nine soil borings were drilled based on the results of the soil vapor survey and review of site features such as the locations of septic fields. Figure 4-9 shows the locations of the soil borings.

The soil borings for this investigation were advanced to the top of bedrock as indicated by auger refusal. The depth to auger refusal generally occurred 20 to 25 feet below ground surface. A Dames & Moore geologist was present during the soil boring program to log the borings, screen the samples with a flame ionization detector (FID) or photoionization detector (PID) organic vapor analyzer, and select soil sampling intervals. The soil boring logs for the investigation are presented in Appendix E.

Appendix F presents the analytical laboratory summary sheets and Dames & Moore's data validation report for the soil boring samples. Table 4-5 presents a summary of the soil boring sample analytical data.

##### 4.4.1 Former Recticon Facility

Five soil borings (R/A7, R/A7A, R/G2, R/H3, and R/L9) were drilled on the former Recticon site. A total of six soil samples were collected from the soil borings based on field screening with a Foxboro Model 108 (FID) organic vapor analyzer (OVA). In some cases, the samples were screened with an HNu (PID) organic vapor meter. The soil boring designations reflect the corresponding soil vapor sample grid location. For example, soil boring R/A7 was drilled at soil vapor sampling grid location R/A7. The purpose of using soil vapor grid locations for soil boring designations is to correlate the soil borings with locations that involved elevated soil vapor measurements.

##### 4.4.1.1 Volatile Organic Compounds

Acetone was detected above the detection limits (generally 5 ug/l) in four samples: R/A7 (18.5 to 20 feet), R/A7A (6 to 8 feet), R/G2 (8 to 10 feet), and R/H3 (8 to 10 feet) at concentrations of 12 ug/kg, 9 ug/kg, 114 ug/kg, and 10 ug/kg, respectively. The concentrations of acetone in three samples, R/A7 (18.5 to 20 feet), R/A7A (6 to 8 feet), and R/H3 (8 to 10 feet) were similar to the acetone concentrations detected in blank samples. The 114-ug/kg concentration detected in R/G2 (8 to 10 feet) cannot be entirely attributed to laboratory or field equipment artifacts. However, the 114-ug/kg concentration does not suggest a major source area for acetone.

The total 1,2-dichloroethene concentration (the sum of cis and trans isomers) for R/A7 (9.5 to 11 feet) was 48 ug/kg. The compound 1,2-dichloroethene was not detected in any other soil sample above the 5.0-ug/kg detection limit. Trichloroethene was detected in R/A7

(9.5 to 11 feet) at a concentration of 1,400 ug/kg. TCE was also detected in R/H3 (8 to 10 feet) at a concentration of 14 ug/kg.

The relatively elevated concentration of TCE in R/A7, compared to other soil samples collected on-site, suggests that R/A7 may be located in proximity to a potential source area. No other volatile organic compounds were detected in the former Recticon soil boring samples.

#### 4.4.1.2 Semivolatile Organic Compounds

One semivolatile organic compound was detected in one of the soil samples from the former Recticon site; that compound was benzoic acid in sample R/L9 (16 to 18 feet) at a concentration of 99 ug/kg. The 99-ug/kg concentration of benzoic acid is less than the 250-ug/kg concentration detected in R/SS-7A, the background surface soil sample.

#### 4.4.1.3 Inorganic Parameters

The inorganic parameter concentrations in the soil boring samples were compared to the background concentrations of those parameters surface soil samples (R/SS-7A, B, and C). If the concentration of an inorganic parameter in a particular soil boring sample exceeded the highest background concentration by more than 10 percent, the concentration was considered to be significant. In addition, the inorganic parameter concentrations were compared to the "average" soil concentrations of Shields (1985). Cadmium, mercury, selenium, silver, sodium, thallium, and cyanide were not detected above their respective detection limits of 0.86 mg/kg, 0.11 mg/kg, 0.49 mg/kg, 1.5 mg/kg, 376 mg/kg, 0.24 mg/kg, and 0.58 mg/kg.

Aluminum, arsenic, calcium, chromium, cobalt, copper, lead, magnesium, potassium, vanadium, and zinc were not detected at concentrations significantly higher than the highest background concentration.

Barium ranged from 38.3 mg/kg to 317 mg/kg. Three samples, R/L9 (181 mg/kg), R/G2 (317 mg/kg), and R/H3 (225 mg/kg) contained barium concentrations exceeding 110 percent of the highest background concentration (139 mg/kg). Although the difference in barium concentrations between the soil boring samples and the background surface soil samples is significant using the 10-percent variance criterion, the highest barium concentration of 317 mg/kg in R/L9 is less than the 430-mg/kg barium concentration reported to represent a national average concentration in soil (Shields, 1985).

The beryllium concentrations ranged from <0.43 mg/kg to 1.3 mg/kg. The highest beryllium concentration in the background surface soil samples was 0.83 mg/kg. Although the 1.3-mg/kg concentration of beryllium in R/G2 exceeds 110 percent of the highest background concentration, the 1.3-mg/kg concentration is significantly lower than the 6-mg/kg average soil concentration (Shields, 1985).

Iron concentrations ranged from 2,300 mg/kg to 18,800 mg/kg. This range of concentrations is not significant, considering that the source of the iron is probably related to natural weathering of the red shale/red sandstone bedrock formation.

Nickel concentrations ranged from 3.3 mg/kg to 31.7 mg/kg. The nickel concentrations in R/A7A (18.9 mg/kg), R/G2 (31.7 mg/kg), and R/H3 (31.7 mg/kg) were significantly higher than the 15.1-mg/kg highest background concentration using the 110-percent criterion. However, the highest nickel concentration of 31.7 mg/kg is lower than the national average soil concentration of 40 mg/kg (Shields, 1985).

#### 4.4.2 Allied Steel Facility

Seven soil samples were collected from the four soil borings drilled on the Allied Steel property. Four soil samples were collected from boring A/C5 at depths of 4 to 6 feet, 14 to 16 feet, 16 to 18 feet, and 18 to 20 feet below ground surface. The sampling depths for borings A/K9A, A/H2, and A/C11 were 8 to 10 feet, 10 to 12 feet, and 16 to 18 feet below ground surface, respectively.

##### 4.4.2.1 Volatile Organic Compounds

With the exception of 1 ug/kg of methylene chloride in sample A/C5 (18 to 20 feet) and 2 ug/kg of trichloroethene in sample A/K9A (8 to 10 feet), no volatile organic compounds were detected above the respective detection limits. The two detected concentrations were estimated values.

##### 4.4.2.2 Semivolatile Organic Compounds

With the exception of benzoic acid in samples A/C5 (4 to 6 feet), A/C5 (14 to 16 feet), A/C5 (18 to 20 feet), and A/K9A (8 to 10 feet) at concentrations of 54 ug/kg, 120 ug/kg, 50 ug/kg, and 49 ug/kg, respectively, and bis(2-ethylhexyl)phthalate in A/K9A (8 to 10 feet) at 62 ug/kg, no semivolatile organic compounds were detected. The detected concentrations of benzoic acid were less than the 250-ug/kg concentration detected in background surface soil sample R/SS-7A. Similarly, the detected concentration of bis(2-ethylhexyl)phthalate in A/K9A, 62 ug/kg, is lower than the 72-ug/kg concentration in background surface soil sample A/SS-7A.

##### 4.4.2.3 Inorganic Parameters

The inorganic parameter concentrations were reviewed with regard to the background inorganic parameter concentrations in surface soil samples R/SS-7A, R/SS-7B, and R/SS-7C. If a parameter exceeded the highest background concentration by more than 10 percent, the concentration was considered to be significant.

Antimony, cadmium, calcium, mercury, selenium, silver, sodium, thallium, and cyanide were not detected above the respective detection limits of 10 mg/kg, 0.86 mg/kg, approximately 300 mg/kg, 0.11 mg/kg, 0.49 mg/kg, 1.5 mg/kg, 379 mg/kg, 0.25 mg/kg, and 0.58 mg/kg.

Aluminum, arsenic, barium, beryllium, cobalt, lead, magnesium, manganese, nickel, potassium, vanadium, and zinc were not detected at concentrations significantly higher than the highest background concentration.

Chromium ranged from 12.4 mg/kg to 21.7 mg/kg. Although the chromium concentration is more than 10 percent higher than the 14.8-mg/kg background concentration, the 21.7-mg/kg chromium concentration is lower than the 100-mg/kg national average chromium concentration in soil (Shields, 1985).

Iron concentrations ranged from 11,600 mg/kg to 21,600 mg/kg. This range of iron concentrations is not considered to be significant due to the red shale/sandstone bedrock, which is naturally high in iron. Hence, weathering of the bedrock to produce the existing soil resulted in the natural levels of iron identified during this investigation.

#### 4.5 HYDROGEOLOGIC INVESTIGATION

The objective of the hydrogeologic investigation was to evaluate groundwater quality and aquifer characteristics.

##### 4.5.1 Site Geology and Hydrogeology

###### 4.5.1.1 Regional Geology

The area of investigation overlies siltstone and shale of the Triassic Newark/Gettysburg Basin. The formation underlying the region is the Gettysburg, which is equivalent to the Brunswick Formation. The Gettysburg Formation consists of interbedded reddish-brown shale, siltstone, and mudstone, and may contain green or brown shales. The difference between the Gettysburg and Brunswick Formations is their geographic occurrences. The Brunswick lies east of an arbitrary cut-off point in the vicinity of the Schuylkill River, and the Gettysburg lies west of the arbitrary cut-off. An additional chronostratigraphic unit is the Hammer Creek Formation, which consists of coarser-grained sedimentary rocks including sandstone and conglomerate. The presence of gravelly and sandy sediments in the unconsolidated soils above bedrock in the study area may suggest proximity to the Hammer Creek Formation and reworking of the Hammer Creek lithology by local streams. The Gettysburg Formation strikes east-west and dips to the north at 12 to 14 degrees.

The unconsolidated soil overlying bedrock in the study area is primarily composed of silty clay with gravelly silt and gravelly clay interbeds. Some gravel and silty sand deposits are also present in the unconsolidated soil of the study area. The interbedded sediments of the unconsolidated soil appear to be the result of mechanical reworking of weathered bedrock by small streams.

###### 4.5.1.2 Site Geology

Figures 4-10 and 4-11 present geologic cross sections A to A' and B to B' for the site vicinity. Figure 4-12 shows the orientations of the cross sections. The subsurface at the site consists of a silty soil to a depth of approximately 25 to 35 feet below ground surface (BGS), which overlies sedimentary rocks of the Gettysburg Formation. The overburden is composed of clay, silt, and sandy clay interbedded with silty sand, well-graded sand, poorly graded gravel, and clayey gravel. This soil profile appears to be the result of weathering and reworking of the underlying Triassic bedrock.

The bedrock at the site consists of Triassic red shale interbedded with thinly bedded siltstone. Small dry fractures and low-yield fracture zones (1 to 2 gallons per minute [gpm]) were encountered in the upper portions (35 to 50 feet BGS) of the bedrock during drilling of the monitoring wells. In general, higher yields (5 gpm or more) were obtained at approximately 60 to 70 feet BGS. The increase in well yield with depth observed in the field is related to the frequency and interconnection of bedding planes and fracture zones (USEPA, February 12, 1993). The cross sections presented in Figures 4-10 and 4-11 indicate that the contact between bedrock and overburden is transitional, with varying thicknesses of saprolite (weathered bedrock) composed of gravel-sized fragments of bedrock in a clay matrix.

#### 4.5.1.3 Site Hydrogeology

In order to evaluate the hydrogeology and groundwater quality of the aquifer that underlies the site, eight overburden wells and eight shallow bedrock wells were installed. The overburden and shallow bedrock wells were constructed as paired well clusters to evaluate groundwater quality in the unconsolidated and bedrock aquifers and the vertical hydraulic gradient. The eight well clusters were logged by a Dames & Moore geologist. The overburden wells were installed to a depth of approximately 30 feet below ground surface, and the shallow bedrock wells were installed to a depth of approximately 65 feet below ground surface. The eight overburden wells are designated OB-1, OB-2, OB-3, OB-4, OB-5, OB-6, OB-7, and OB-8. The eight bedrock wells are designated BR-1, BR-2, BR-3, BR-4, BR-5, BR-6, BR-7, and BR-8. The well locations are illustrated on Figure 4-14. Appendix G presents the boring and construction logs for the monitoring wells.

Table 4-6 summarizes the construction details for the monitoring wells installed during this investigation. The overburden monitoring wells were constructed with 10 feet of 0.010-inch slotted, threaded schedule 40 PVC screen and threaded schedule 40 PVC riser pipe to 2 feet above ground surface. The bedrock monitoring wells were cased with 10-inch-diameter steel pipe from ground surface to a minimum of 10 feet into competent bedrock. The monitoring wells were installed in accordance with the procedures presented in the RI work plan and reproduced in Appendix A.

Review of the boring logs, cross sections, and groundwater elevation data indicates that groundwater occurs in two discrete zones: the overburden and bedrock. Groundwater in the overburden appears to recharge the bedrock aquifer as evidenced by the presence of TCE in the overburden and bedrock aquifer. Hence, two aquifers (overburden and bedrock) were identified during this investigation.

Figure 4-13 presents a groundwater elevation map for the overburden aquifer for water level data collected on March 4, 1991. The orientation of the groundwater contours indicates a preferential groundwater flow toward the east. Water level data in the vicinity of the former Recticon facility suggest a local cone of depression, possibly resulting from water withdrawal from W-3, the on-site production well. The potential effects of other production wells in the area on the water table contours were not considered in this investigation and data evaluation. The Phase II work plan will include a scope of work to evaluate local groundwater usage. Based on the groundwater contours, the average horizontal gradient for the overburden aquifer is 0.005.

Table 4-7 summarizes water level data collected on March 4, 1991. Figure 4-14 presents a groundwater elevation map for the bedrock aquifer for the March 4, 1991, water level data. The general flow direction for groundwater in the bedrock aquifer was to the east-southeast, similar to the flow in the overburden aquifer. It appears that the effects of pumping W-3 (former Recticon facility production well) were evident in BR-1 and OB-1. The paving throughout the former Recticon site probably limits recharge, thereby enhancing the effects of pumping in the vicinity of the BR-1 and OB-1 well cluster. It is important to note that although the on-site production well affects groundwater contours, no trichloroethylene has been detected in W-3. The horizontal gradient for the bedrock aquifer (between BR-2 and BR-8) is 0.007.

Figure 4-15 presents a summary of the calculated vertical gradients (vertical distance based on the distance between the middle of the overburden well screen and the middle of the bedrock open-hole) for each of the well clusters for the March 4, 1991, water elevation data. A positive vertical gradient indicates an upward flow direction, and a negative vertical gradient represents a downward flow direction. Review of the March 4, 1991, data indicates that the vertical gradient was downward (from the overburden aquifer to the bedrock aquifer). The magnitude of the vertical gradient decreases from the former Recticon facility to the Allied Steel facility (0.078 in BR-4/OB-4 to 0.0007 in BR-7/OB-7). The BR-1/OB-1 well cluster has a 0.02 upward gradient. The upward gradient is probably due to a lack of groundwater in the overburden aquifer in the vicinity of OB-1. OB-1 was dry during several sampling events. The absence of groundwater in the vicinity of OB-1 was possibly related to reduced recharge on the former Recticon site related to the paving of the parking lot.

Figures 4-16 and 4-17 present the groundwater elevation contours for the overburden and bedrock aquifers, respectively, for April 2, 1991. Table 4-8 summarizes the water level data for April 2, 1991. The overburden aquifer contours show groundwater flow to the east, with a gradient of 0.0035 (calculated from OB-1 to OB-8). A potential effect on the groundwater elevation contours due to pumping of W-3 is suggested. The bedrock elevation contours suggest minimal impact due to pumping of W-3. The horizontal gradient is to the east-southeast, at a gradient of 0.0069. The horizontal gradients and flow direction from March 1991 to April 1991 are similar.

Figure 4-18 presents a summary of the vertical gradients for the well clusters based on water level data from April 2, 1991. The vertical gradients between the March 4, 1991, and April 2, 1991, data are similar. The vertical gradients are generally downward from the overburden aquifer to the bedrock aquifer, suggesting that groundwater was perched in the overburden aquifer. The vertical gradients are larger for the former Recticon monitoring wells. This condition is probably due to the relatively steeper topography west of the former Recticon facility and a recharge source further west, where the topography becomes less steep. The BR-1/OB-1 well cluster has a net positive value, suggesting an upward gradient. This condition is probably due to decreased groundwater infiltration in the vicinity of OB-1 due to the paved surface of the parking lot. The absence of water in OB-1 was noted during several sampling rounds.

Figures 4-19 and 4-20 present the groundwater elevation data for the overburden and bedrock aquifers, respectively, for July 10, 1991. Table 4-9 summarizes the water level data for July 10, 1991. Groundwater flow in the overburden aquifer was generally to the east,

at a horizontal gradient of 0.005 (measured from OB-2 to OB-8). Groundwater flow in the bedrock aquifer was to the southeast, at a horizontal gradient of 0.006. The horizontal gradient in the bedrock aquifer is less steep than the horizontal gradient of March 4, 1991 (approximately 0.007), and April 2, 1991 (approximately 0.007). The overall groundwater elevation at the site in July was lower than in April. For example, the water level in BR-5 was 110.13 feet above mean sea level (MSL) in April 1991 and 107.80 feet MSL in July 1991. This difference was probably a seasonal variation resulting from increased evapotranspiration during the summer months. A similar pattern was noted for the overburden aquifer. The water levels for OB-5 was 110.47 feet MSL in April 1991 and 108.03 in July 1991.

Figure 4-21 presents a summary of the vertical gradients for the well clusters on July 10, 1991. The vertical gradients for the Allied Steel property decreased from April to July. This decrease probably resulted from "normal" depression of the water table in the summer season.

Figures 4-22 and 4-23 present groundwater elevation data for the overburden and bedrock aquifers on September 17, 1991. Table 4-10 summarizes the water level data for September 17, 1991. Groundwater flow in the overburden aquifer appears to be to the east, at a horizontal gradient of 0.004. Groundwater flow in the bedrock aquifer appears to be to the southeast, at a horizontal gradient of 0.005 (measured from BR-2 to BR-8). The horizontal gradient of 0.005 on September 17, 1991, is less steep than on March 4, 1991 (0.007), April 2, 1991 (0.007), and July 10, 1991 (0.006). The progressive decrease in horizontal gradient in the bedrock aquifer from March 1991 through September 1991 was probably seasonally controlled.

Figure 4-24 presents a summary of the vertical gradients for the well clusters on September 17, 1991. The vertical gradients for the Allied Steel facility continued to decrease from March 4, 1991, April 2, 1991, and July 10, 1991. This decrease was likely the result of the seasonal decrease in horizontal gradient noted in the bedrock aquifer from March 1991 through September 1991.

Figures 4-25 and 4-26 present groundwater elevation contour data for the overburden and bedrock aquifers on November 4, 1991. Table 4-11 summarizes the water level data for November 4, 1991. Groundwater flow in the overburden aquifer appears to be to the east and groundwater flow in the bedrock aquifer appears to be to the southeast. The vertical gradients for the monitoring well clusters appear to be similar to the September 1991 vertical gradients. The OB-8/BR-8 well cluster appears to have a slightly positive (upward) gradient. However, the value of the gradient (0.017 ft/ft) is a relatively small value resulting from a very small difference in hydraulic head between the overburden and bedrock monitoring wells.

Weston (1980) conducted a fracture trace analysis using aerial photographs. They detected fracture traces and structural features that indicated a predominant east-west strike of bedding. Weston (1980) concluded that groundwater would preferentially flow along the strike of bedding, i.e., that groundwater flow would be structurally controlled. No published field studies were conducted by Weston to verify their aerial photo interpretation.

#### 4.6 AQUIFER TEST ANALYSIS

The aquifer test data collected during this investigation were analyzed by Dames & Moore using a methodology that has been successfully employed on other sites to predict future zones of capture. The method is empirical in that it uses the slopes of drawdown curves plotted from data collected from individual monitoring wells during the pumping and recovery phases of the aquifer test. The method employed has been used to accurately predict the zones of capture for a number of variable hydrogeological circumstances without performing complex and costly computer modeling. The advantage of the method used is that the transmissivities calculated for each individual monitoring well are used as an aquifer response function for the individual well location. The aquifer response function is used to predict potential drawdown for the individual well to pumping of the discharging well from the aquifer test. In this regard, calculation of the aquifer response function, represents an empirical measurement of all of the boundary (including leakage from the overburden, variations in permeability throughout the bedrock and overburden, the effect of partial penetration, recharge condition, and a multitude of other possible effects that cannot be determined at this time).

Prediction and identification of all of the possible factors that could contribute to the slope and implications of the drawdown curves, and their individual contributions to the slopes of the drawdown curves, cannot be fully evaluated using the available information on site. Dames & Moore's objective for the aquifer test data analysis was to accurately predict the future drawdowns in observation wells to ground water recovery from well OW-2. Dames & Moore believes that we have achieved this objective and that operation of a ground water pumping and treatment system will result in a similar zone of capture as the one predicted in the aquifer test data analysis. The effects ground water recovery will be evaluated upon installation and operation of a ground water recovery system. Based on comments received from USEPA, it appears that USEPA would have preferred a more conventional aquifer test. However, we agree with a recent comment made by USEPA "Dames & Moore responded to some of USEPA's requests, but the more qualitative and esoteric hydrologic comments were disputed. While USEPA has responded to these, the arguments have a minor bearing on the outcome of the eventual remediation, as long as additional hydrologic and ground water quality information is gathered in conjunction with the ultimate remedy."

Dames & Moore agrees with this comment. In the event of initiation of site remediations, the eventual zone of capture for a pumping and testing system can be measured. It is also agreed that additional hydrologic data collection would aid in defining site conditions. Dames & Moore also agrees with an additional USEPA comment indicating that the data evaluation presented in this report represents a first approximation of aquifer conditions.

Note that Dames & Moore agrees that there are certain uncertainties associated with our method of aquifer test data evaluation in that we do not know the exact contribution of boundary conditions such as the effect of partial penetration, variability in formation permeability due to fracture locations, bedding planes, leakage conditions, changes in overburden permeability, etc., we believe that because we are applying an empirical data evaluation to predict eventual drawdowns in wells to pumping of OW-2, the exact contribution of each of the boundary conditions is inconsequential. As discussed by USEPA, the arguments concerning the advantages and disadvantages over the use of

our method of data evaluation are moot because they have no impact on the outcome of site remediation.

Also note that Dames & Moore's conclusions that pumping from OW-2 results in the capture of ground water from deeper portions [of the aquifer] is speculative and subject to further investigation.

#### 4.6.1 Introduction

Dames & Moore conducted a 24-hour aquifer pumping test on September 24 and 25, 1991. The purpose of the aquifer test was to evaluate aquifer characteristics including transmissivity, storativity, and the degree of interconnection between the shallow bedrock and overburden aquifers. The aquifer test was performed on the Allied Steel site because the site is currently unoccupied thereby limiting the effect of production wells or the test results. The absence of traffic on-site and general lack of activity was considered to be advantageous for performing the aquifer test. The vehicular activity, lack of space for a pump- test water storage tank, and production of water for site activities from the on-site production well (W-3) at the former Recticon facility, introduced the potential for a high degree of interference with the aquifer test if it was performed at the Recticon facility.

Two observation wells, OW-1 and OW-2, were installed at the Allied Steel site for the aquifer test. Figure 4-25 shows the locations of the pumping and observation wells, and Appendix G presents the boring logs and construction details for these wells. Step-drawdown testing of BR-5 and OW-2 was conducted to select the most appropriate testing well. The step-drawdown test on BR-5 indicated a yield of 5 to 10 gallons per minute, with minimal drawdown in OW-2. A sustainable yield of at least 16 gallons per minute, with a significant drawdown in monitoring wells BR-5, OW-1, and BR-8, was observed during the step-drawdown test on OW-2. Therefore, the pump test was performed on well OW-2.

The 24-hour aquifer test of OW-2 was performed in accordance with the procedures proposed to USEPA (Dames & Moore progress report for August 1991) and are reproduced in Appendix H. Well OW-2 was pumped at 12 gpm; drawdown measurements were made in the pumped well and 17 on-site wells. Drawdown measurements were made in bedrock wells OW-1, OW-2, and BR-1 through BR-8, and in overburden wells OB-1 through OB-8. OW-2 was pumped at 12 gpm for 1,308 minutes until, toward the end of the test, the pump rate was increased to 16.5 gpm for the final 116 minutes of the test in order to evaluate the effect of a higher discharge rate on drawdown in the pumping well.

After the pump in OW-2 had been shut off, recovery measurements were made for approximately 6 minutes until it was discovered that the pump discharge valve had not been shut off. The open check valve resulted in water running back into the well. The pump was turned on again until the water level in the well had again reached its original maximum drawdown. The pump was then turned off again and the discharge water was prevented from re-entering the well. Water level recovery measurements were then continued in all observation wells.

The bedrock monitoring wells were constructed as open holes in the bedrock aquifer. The depths to water ranged from approximately 28 to 33 feet BGS and the total depths of the wells range from 40 to 70 feet BGS. In general, the upper 400 feet of Triassic bedrock can yield water via fracture flow (Sloto, 1987). Because the bedrock monitoring wells are completed within a fraction of the bedrock capable of yielding water, the monitoring wells on-site are considered to be partially penetrating. In addition, due to the fracture flow (secondary porosity) of the bedrock, the aquifer is anisotropic. This means that the aquifer test conditions contain several deviations from Theis assumptions, including:

- 1) The aquifer exists under water table conditions; therefore, delayed drainage effects can be expected.
- 2) The pumping well only partially penetrates the aquifer, so departures from the Theis-type curve occur. The effect of partial penetration is generally manifested as a recharge boundary from the lower portion of the aquifer (not penetrated) to the upper portion of the aquifer. This feature can possibly be modelled as a recharging image well.
- 3) The aquifer is fractured bedrock and anisotropic.

USEPA has requested inclusion of the following considerations:

- The bedrock aquifer is a dual porosity system. Ground water is stored in both fracture porosity and intergranular primary porosity. Fracture porosity has generally a higher permeability but also a lower storativity than the intergranular porosity. Ground water in fracture porosity is the first water to respond to pumping. This is followed by a response from the water stored within intergranular porosity. The intergranular porosity response appears similar to the response of a recharge boundary. The timing and size of the intergranular porosity response is dependent on the amount and quality of intergranular porosity. The boundary condition response seen during this pump test is most likely the result of the intergranular porosity, not recharge from a deeper aquifer. As stated above, dipping water-bearing zones connect the ground water found at depth with that encountered at shallow depths.
- The effects of these dipping water-bearing zones can also be seen in the response of the overburden wells. OB-8 is located in an up dip position from the pumping well OW-2. OB-2 shows 0.21 feet of drawdown, which began almost instantaneously. Water-bearing zones subcropping in the vicinity of OB-8 directly connect OW-2 to OB-8. This compares with OB-5, which is located horizontally closer to OW-2 than OB-8. OB-5 showed only 0.07 feet of delayed drawdown. OB-5 is located in the down dip direction, but is not directly connected to the same dipping water-bearing zones pumped in OW-2.

Although there are families of type curves available for use in situations in which there is a deviation from the Theis conditions, there are no families of curves available that deal with multiple simultaneous deviations from the Theis assumptions. These difficulties can be

overcome by using Image Well Theory in conjunction with the Theis-type curve and the Theis equation.

The Image Well Theory has been widely used (Fetter, 1980, Todd 1959). In general practice, the results of deviations of the actual site conditions from the Theis assumptions are manifested as a single inflection of the drawdown curve for a particular observation well. This inflection is generally manifested as a recharge boundary on the drawdown curve. The Image Well Theory models the inflection of the drawdown curve as a single recharge well (boundary).

#### 4.6.2 Aquifer Test Data Analysis

The following section discusses the individual drawdown and recovery curves for each observation well. Drawdown and recovery data are given in Appendix I. Log-log and semi-log plots are provided with the data. The apparent or imaginary values of transmissivity and storativity were derived by matching the Theis-type curve with the log-log data plots and by using the Jacob straight-line method with the semi-log plots. There is generally good agreement between the results of the two methods, as shown in Table 4-12.

##### 4.6.2.1 Pumping Well OW-2 Drawdown Curve

A log-log plot of the drawdown curve for OW-2 is given in Appendix I. Matching the Theis-type curve to the "early time" drawdown data (first 4 minutes) yields an apparent transmissivity of 361.6 gpd/ft and a storativity of  $7.625E-1$ . The Theis curve plateaus after the first 4 minutes of the pumping test. This departure in the drawdown curve, under the Image Well Theory, is the result of recharging image wells representing groundwater flow from deeper in the aquifer. The small irregularities in the flat portion of the drawdown curve are caused by fluctuations in the pumping rate. The spike at the end of the test was caused by increasing the pumping rate from 12 to 16.5 gpm. The flattening out of the drawdown curve indicates that this well can be expected to produce 16.5 gpm indefinitely.

##### Recovery curve for OW-2

The recovery curve is defined as the projected drawdown curve minus the residual drawdown obtained when the pump is turned off. In this particular case, the pumping rate was increased to 16.5 gpm near the end of the test. Because the drawdown at 16.5 gpm stabilized in approximately 6 minutes, the projected drawdown when the pump was turned off is constant with time. The recovery curve is very smooth compared to the drawdown curve. Matching the early part of the recovery data to the Theis-type curve yields an apparent transmissivity of 377.2 gpd/ft and storativity of  $3.635E-1$ . This value is very close to the apparent transmissivity (361.6 gpd/ft) obtained from the early part of the drawdown data.

##### 4.6.2.2 Observation Well BR-5 Drawdown Curve

The drawdown curve for BR-5 shows a recharge boundary departure from the Theis-type curve. This departure or flattening from the Theis non-equilibrium-type curve is the result of recharging image wells associated with the deeper part of the aquifer. Matching the

early-time drawdown data prior to departure to the Theis-type curve gives an apparent transmissivity of 353.4 gpd/ft and storativity of  $1.175\text{E-}4$ . This value is similar to the value obtained from the early part of the OW-2 drawdown curve (361.6 gpd/ft). The similarity between the transmissivities of the early-time drawdown data in the pumped well and observation well BR-5 suggests that the vertical hydraulic conductivity of the rock zone between OW-2 and BR-5 is relatively low, thereby restricting upward groundwater flow from the deeper parts of the aquifer in this area. Note that if a confining layer underlaid all these wells, and if there were no other deviations from the Theis assumption at the elevation of the bottom of the pumped well, the transmissivities obtained from all the drawdown data from all the wells would be the same and there would be no departures from the Theis-type curve.

The late-time part of the drawdown curve has some irregularities resulting from fluctuations in the pumping rate of the pumped well. There is a spike at the end of the curve, resulting from the pumping rate having been increased from 12 to 16.5 gpm near the end of the test. This spike at the end of the drawdown curve in observation well BR-5 corresponds favorably to the spike observed at the end of the drawdown curve for the pumped well.

#### Recovery curve for BR-5

The recovery curve for BR-5 is very similar to the drawdown curve for BR-5, but is much smoother in the departure part of the curve. Matching the early-time recovery data to the Theis-type curve yields an apparent transmissivity of 328.5 gpd/ft and storativity of  $1.171\text{E-}4$ . These values are very similar to the values obtained for the drawdown curve for this well.

The late-time drawdown data show a departure below the Theis-type curve in the direction of recharging images. This flattening out of the drawdown curve is the result of recharging image wells associated with the deeper part of the bedrock aquifer. The locations of the image wells would lie beyond the location of BR-5 relative to the pumping well, indicating good hydraulic connection with the deeper part of the aquifer at the greater distance from the observation well. Because the departure curve is so flat, it is not possible to match the Theis-type curve to the departure curve.

#### 4.6.2.3 Observation Well OW-1 Drawdown Curve

The drawdown curve for OW-1 also shows a departure below the Theis-type curve in the direction of recharging images. Matching the early-time drawdown data to the Theis-type curve yields an apparent transmissivity of 3,700 gpd/ft and storativity of  $2.755\text{E-}3$ . This well, OW-1, is oriented south of the pumped well, approximately the same distance from the pumped well as well BR-5, which is located north of the pumped well. The significantly higher early-time apparent transmissivity of OW-1 compared to BR-5 indicates that the vertical hydraulic conductivity of the rock zone between OW-2 and OW-1 is higher than the conductivity of the zone between OW-2 and BR-5.

Matching the late-time drawdown data to the Theis-type curve yields an apparent transmissivity of 26,200 gpd/ft and storativity of  $2.513\text{E-}4$ . The late-time drawdown data show a departure below the Theis curve in the direction of recharging images.

The late-time part of the drawdown curve in this observation well displays some irregularities as a result of fluctuations in the pumping rate in the pumped well. The spike at the end of the curve resulted from increasing the pumping rate in the pumped well near the end of the test from 12 gpm to 16.5 gpm.

#### Recovery curve for OW-1

Except for the first few points, the recovery curve for OW-1 is smoother than the drawdown curve for OW-1. Matching the early-time recovery data to the Theis-type curve yields an apparent transmissivity of 3,520 gpd/ft and storativity of  $2.941\text{E-}3$ . These values are nearly identical to the values obtained from the early-time drawdown data from this well.

Matching the late-time recovery data to the Theis-type curve yields an apparent transmissivity of 27,320 gpd/ft and storativity of  $7.559\text{E-}5$ . These values are similar to the values obtained from the late-time drawdown data for this observation well.

#### 4.6.2.4 Observation Well BR-8 Drawdown Curve

Observation well BR-8 is situated 100 feet south of the pumped well. The total drawdown in this well is on the order of 0.17 foot. The drawdown curve has irregularities of a few hundredths of a foot resulting from irregularities in the pumping rate of the pumped well and irregularities in the response of the pressure transducer that was operating near its limit of sensitivity in this observation well. This drawdown curve also shows a departure from the Theis-type curve in the direction of recharging images.

Matching the early-time drawdown data to the Theis-type curve yields an apparent transmissivity of 28,720 gpd/ft and storativity of  $1.343\text{E-}3$ . The late-time drawdown data show a departure below the Theis-type curve resulting for recharging image wells associated with deeper part of the bedrock aquifer. Matching the late-time drawdown data to the Theis-type curve yields an apparent transmissivity of 150,700 gpd/ft and storativity of  $4.247\text{E-}6$ . This departure curve also shows a spike at the end, resulting from the pumping rate in the pumped well having been increased from 12 to 16.5 gpm near the end of the test.

#### Recovery curve for BR-8

The recovery curve for BR-8 shows irregularities resulting from small irregularities in the response of the pressure transducer, which was operating near its limit of sensitivity. Because of this factor, the recovery curve for this observation well is not smoother than the drawdown curve for this well. Matching the early-time recovery data to the Theis-type curve yields apparent values of transmissivity of 23,260 gpd/ft and storativity of  $2.860\text{E-}3$ . These values are very similar to those obtained for the drawdown data from this well.

Matching the late-time recovery data to the Theis-type curve yields apparent values for transmissivity of 168,500 gpd/ft and storativity of  $5.976\text{E-}6$ . These values are very similar to those obtained from the late-time drawdown data from this well.

#### 4.6.2.5 Observation Well BR-3 Drawdown Curve

Observation well BR-3 is the most distant observation well that showed a measurable drawdown response to the pumping of well OW-2. All the other distant monitoring wells showed a water level rise during the pumping of well OW-2. This rise is believed to be caused by water level recoveries caused by the shutting of a deep plant-production well (W-3), located near monitoring well BR-1. Because of the nearness of well BR-3 to the suspected interfering production well, corrections were made to the measured drawdowns observed in BR-3 to compensate for the general bedrock aquifer water level changes resulting from recovery related to the nearby deep production well. Figure 4-27 is a semi-log plot of water levels in bedrock aquifer wells BR-2 and BR-4. Well BR-3 lies approximately equidistant between BR-2 and BR-4, but closer to test pumping well OW-2. As a first approximation, it is assumed that the magnitude of water level changes in BR-3 due to recovery from production well (W-3) would have been approximately midway between the recoveries for BR-2 and BR-4, if OW-2 had not been pumped. Therefore, a theoretical value for recovery in BR-3 due to W-3 was extrapolated as the midpoint between the two recovery curves for BR-4 and BR-2. The extrapolation of the recovery curve for BR-3, related to recovery of W-3, is illustrated on Figure 4-27. The values represented by the extrapolated curve were subtracted from the drawdown curve to BR-3. This results in a drawdown curve for BR-3, corrected for recovery due to W-3.

The total observed drawdown in BR-3 was only 0.11 foot, while the total maximum corrected drawdown was only 0.20 foot. Because the total drawdown is relatively small, measurement errors on the order of approximately 0.01 foot make the drawdown curve appear to be rough. Matching the Theis-type curve to the early-time corrected drawdown data for well BR-3 yields apparent or imaginary values of transmissivity of 22,300 gpd/ft and storativity of  $4.611\text{E-}3$ .

Matching the late-time corrected drawdown data for BR-3 to the Theis-type curve yields apparent values of transmissivity of 90,830 gpd/ft and storativity of  $6.220\text{E-}6$ . These values were used to project the drawdown at this location to be expected after pumping OW-2 for 30 days. If the drawdown corrections (caused by the interference of the nearby production well) had not been made, the projected drawdown at this location would have been only about 0.11 foot.

Insufficient recovery measurements were made in BR-3 to plot a recovery curve. Two water level measurements were made during the recovery period (at 1,527 and 1,625 minutes), which appear as the last two points on the drawdown curve.

#### 4.6.3 Response of Overburden Aquifer to Pumping of OW-2

Two overburden wells (OB-5 and OB-8) showed a measurable drawdown response to the pumping of well OW-2. The maximum drawdown in OB-5, which is 40 feet from the pumping well, was 0.07 foot, whereas the maximum drawdown in OB-8, which is 123 feet from the pumping well, was 0.21 foot. If the aquifer conditions were uniform, the more distant observation well would be expected to have a smaller drawdown. This significant difference in response to pumping indicates significant variations in overburden aquifer permeability and transmissivity within the zone of influence.

#### 4.6.3.1 Observation Well OB-5 Drawdown Curve

The total drawdown for overburden well OB-5 was 0.07 foot, which is significantly less than the maximum drawdown in nearby bedrock well BR-5 (4.96 feet). The early-time drawdowns are in the range of 0.01 to 0.02 foot, which are within the range of measurement error with a water level indicator, so no attempt was made to match the Theis-type curve to the early-time data. Matching the late-time drawdown data to the Theis-type curve yields apparent or imaginary values of transmissivity of 9,295 gpd/ft and storativity of 1.527.

It should be emphasized that these values for transmissivity and storativity obtained from this overburden well are completely imaginary, because this overburden aquifer overlies the bedrock aquifer, which contains the pumping well. As a result, the groundwater flow direction in the overburden aquifer in response to the pumping of OW-2 is primarily vertical, downward and toward the bedrock aquifer, rather than conforming to the Theis assumption of being horizontal toward the pumping well. However, this limitation does not make the drawdown data in the overburden well, resulting from pumping bedrock well OW-2, useless. The imaginary values for the parameters can still be used with the Theis equation to predict future drawdowns in the overburden aquifer.

#### 4.6.3.2 Observation Well OB-8 Drawdown Curve

The total drawdown for overburden well OB-8 was only 0.21 foot, which is slightly more than the total drawdown for the nearby bedrock well BR-8 (0.17 foot). The drawdown curve shows a departure above the Theis-type curve in the direction of a discharging image well at approximately 600 minutes. Matching the Theis-type curve to the early-time drawdown data gives apparent or imaginary values for transmissivity of 254,400 gpd/ft and storativity of  $5.762\text{E-}1$ . Matching the late-time drawdown data to the Theis-type curve gives apparent or imaginary values for transmissivity of 68,460 gpd/ft and storativity of  $6.465\text{E-}1$ .

It should be emphasized that these values for transmissivity and storativity obtained from this overburden well are completely imaginary because this aquifer overlies the aquifer that contains the pumping well. As a result, the groundwater flow direction in the overburden aquifer in response to the pumping of OW-2 is primarily vertical, downward and toward the bedrock aquifer, rather than conforming to the Theis assumption of being horizontal and toward the pumping well. However, this limitation does not make the drawdown data in the overburden well, resulting from pumping bedrock well OW-2, useless. These data can still be used to make future drawdown projections in the overburden aquifer at this point.

#### 4.6.3.3 Significance of Overburden Aquifer Response to Pumping of OW-2

These drawdown data from overburden aquifer wells OB-5 and OB-8 indicate that:

- 1) There is hydraulic connection between the overburden aquifer and the bedrock aquifer.
- 2) The degree of hydraulic connection between the overburden aquifer and the bedrock aquifer varies significantly within short horizontal distances throughout

the site (drawdown response of 0.17 foot in OB-8, which lies 123.7 feet from pumping well OW-2), but only 0.07 foot of drawdown in OB-5, which is 40 feet from the pumping well.

#### 4.6.3.4 Overburden Aquifer Response to Other Piezometric Changes in Bedrock Aquifer

Many of the observation wells monitored during the pumping test showed a recovery curve rather than a drawdown curve. The recovery (or rise) in water levels appears to be related to W-3 on the Recticon property, because the magnitude of water level rise increases toward W-3. Hydrographs for monitoring wells BR-1, BR-2, BR-4, BR-6, BR-7, OB-1, OB-2, OB-4, OB-6, and OB-7 are presented in Appendix I. Although there are no records available regarding the pumping schedule of the production well, water levels in monitoring well BR-1 have the characteristics of responding to a nearby pump going on and off. For the first 400 minutes, the water level in BR-1 rose, indicating that the nearby pump had recently been turned off. The initial rise observed in BR-1 was followed by subsequent drawdown and recovery cycles indicative of the sporadic operation of a nearby production well. Similar patterns are observed on the hydrographs for the remaining monitoring wells (BR-2, BR-4, BR-6, BR-7, OB-2, OB-4, OB-6, and OB-7).

#### 4.6.3.5 Long-Term Water Level Changes

Comparison of the March 1991 groundwater contour maps for the overburden and bedrock aquifers (Figures 4-13 and 4-14, respectively) to the April 1991 groundwater contour maps for the overburden and bedrock aquifers (Figures 4-16 and 4-17, respectively) indicates that water levels in both aquifers increased from March 1991 to April 1991. Both aquifers show water level rises of a similar magnitude for the period, with the greatest rise in BR-1 and OB-1 at the west end of the site, and the smallest rises at the east end of the site. The greatest rise, in the vicinity of the Recticon production well, suggests that both aquifers may have been recovering from pumping of the Recticon well. Because the water level rise is similar for the overburden aquifer and the bedrock aquifer wells at each well pair location, good hydraulic connection may exist between the two aquifers. Examination of water levels in the overburden aquifer compared to water levels in the bedrock aquifer shows consistent downward gradient from the overburden aquifer to the bedrock aquifer. This finding indicates that the overburden aquifer is a zone of recharge for the underlying bedrock aquifer. The Phase II work plan will present a scope of work that will investigate the effects of local supply-well production on groundwater contours in the vicinity of the site.

#### 4.6.3.6 Overview of Pumping Test Results

The significant inflection (flattening out) of the drawdown curves for all the wells indicates that a significant part of the water derived from pumping OW-2 was obtained from the deeper part of the aquifer, below the limit of penetration of OW-2.

The storativity values obtained from the late-time drawdown data for the observation wells (exclusive of the pumped well) are very small, in the range of values common in confined aquifers ( $1.0\text{E-}4$  to  $1.0\text{E-}8$ ). This finding indicates that a significant part of the

water derived from long-term pumping of OW-2 was derived from the deeper part of the aquifer, which acts as if it is confined relative to the shallow part of the aquifer.

The storativity values obtained from the early-time drawdown data from the observation wells (exclusive of the pumped well) are larger, in the range of  $1.0\text{E-}3$  to  $1.0\text{E-}4$ , indicating that part of the water derived from pumping OW-2 results from gravity drainage of the aquifer in the vicinity of the water table.

The lower transmissivities obtained north of pumping well OW-2, compared to transmissivities south of OW-2, indicate that the aquifer is significantly non-homogeneous in this area and that OW-2 derives more water from a southerly direction than from a northerly direction.

Pumping of OW-2 derives a significant portion of its water from the deeper part of the aquifer, suggesting that if contamination exists at depth, pumping of OW-2 will recover contaminated water from the deeper part of the aquifer.

The response of water levels in the overburden wells OB-5 (0.07 ft.) and OB-8 (0.21 ft.) in response to pumping OW-2 indicate that there is a hydraulic connection between the bedrock and overburden aquifers. Drawdowns were not observed in the remaining overburden aquifers, therefore, a map of total drawdowns in the overburden aquifers was not made.

#### Projected cone of depression

The cone of depression of a pumping well continues to expand until it reaches a recharge boundary, at which time the aquifer stops acting as a source of water and starts acting only as a conduit to conduct water from the zone of recharge to the pumping well. For a water table aquifer, the zone of recharge is the vadose zone, which receives recharge from rainfall. In the eastern part of the United States, it generally rains every month, so rainfall recharge can be expected nearly every month, except during periods of drought and when the evaporation potential is high in the summer season. On this basis, Dames & Moore selected a 30-day duration for calculation of the projected cone of depression. Therefore, for long-term projections of drawdown at this site, a period of 1 month was used. By using the late-time apparent or imaginary values of transmissivity and storativity for each individual observation well, in accordance with image well theory, and an assumed pumping rate of 16.5 gpm for 30 days, the projected drawdown was obtained for each observation well. For example, using the apparent transmissivity of 2,445 gpd/ft and storativity of  $5.914\text{E-}4$  with a well radius of 0.25 foot in the Theis equation for OW-2, the projected drawdown at OW-2 after 30 days is 15.62 feet. Likewise, using the apparent transmissivity of 5601 gpd/ft and storativity of  $1.354\text{E-}7$  with a radial distance of 38.3 feet in the Theis equation for BR-5, the projected drawdown at BR-5 after 30 days is 6.53 feet. This process was used for BR-8, OW-1, and BR-3. Table 4-13 summarizes the projected drawdown values. These projected drawdowns were plotted on a map of the site and contoured to form the projected cone of depression caused by pumping OW-2 at 16.5 gpm for 30 days (Figure 4-28). Examination of this cone of depression shows that the aquifer response to pumping OW-2 is nonuniform and that the cone of depression has a preferred orientation.

### Projected zone of capture

By mathematically subtracting the cone of depression (Figure 4-28) from the piezometric surface of the bedrock aquifer under static conditions as defined by the April 2, 1991, groundwater contour map (Figure 4-17), a projected piezometric surface for the bedrock aquifer showing the long-term effects of pumping OW-2 at 16.5 gpm is obtained (Figure 4-29). Because the piezometric surface of the bedrock aquifer is not level, the zone of capture for pumping well OW-2 does not coincide with the cone of depression. By performing flow net analysis on the projected piezometric map, groundwater flow lines resulting from the projected pumping are delineated. The boundary between groundwater flow lines that terminate in the pumping well and groundwater flow lines that bypass the pumping well is designated as the zone of capture of the pumping well. Examination of Figure 4-29 shows that the zone of capture of OW-2 extends downgradient as far as monitoring well BR-8. This finding means that groundwater downgradient of BR-8 would lie beyond the zone of capture of OW-2.

## 4.7 GROUNDWATER SAMPLING

Groundwater samples were collected from the 16 Phase I monitoring wells on four separate occasions. The purpose of collecting four rounds of groundwater samples was to evaluate trends in the groundwater data with regard to seasonal or statistical variations. Groundwater was sampled in April 1991, July 1991, September 1991, and November 1991. Originally, the time interval between sampling events was proposed at 3 months. However, in an effort to complete the RI investigation in a timely manner and in consultation with USEPA (as discussed in the August 18, 1991, process report to USEPA), the September 1991 and November 1991 samples were collected on a compressed schedule.

The groundwater samples were collected in accordance with the Phase I RI work plan. The groundwater sampling protocols proposed in the Phase I RI work plan are reproduced in Appendix A.

The first groundwater sampling event occurred in April 1991. The first round of groundwater samples was analyzed for TCL semivolatile organic compounds, TAL inorganic compounds plus cyanide, and USEPA Method 524.2 volatile organic compounds. Review of analytical results for the April 1991 sampling data suggested that semivolatile organic compounds and TAL inorganic parameters were not present in the groundwater samples at significant concentrations. Therefore, upon consultation with USEPA and in accordance with the Phase I RI work plan, the three remaining groundwater sampling events involved the collection of samples for volatile organic compounds analysis (USEPA Method 524.2) only.

### 4.7.1 April 1991 Analytical Results

Table 4-14 summarizes the analytical results for the April 1991 groundwater sampling event. The laboratory summary sheets and Dames & Moore data validation report for the April 1991 data are presented in Appendix J.

#### 4.7.1.1 Volatile Organic Compounds

Benzene was detected in OB-5 at an estimated concentration of 0.12 ug/l. This was the only occurrence of benzene in the April 1991 samples.

Chloroform was detected at concentrations of 0.16 ug/l, 0.060 ug/l, and 0.080 ug/l in overburden aquifer monitoring wells OB-2, OB-5, and OB-6, respectively. Chloroform was detected in bedrock aquifer monitoring wells BR-1, BR-2, BR-3, BR-5, BR-6, BR-7, and BR-8 at concentrations of 0.55 ug/l, 0.15 ug/l, 0.21 ug/l, 0.17 ug/l, 0.10 ug/l, 0.19 ug/l, and 0.25 ug/l, respectively. The chloroform concentrations detected in the April 1991 samples are three orders of magnitude lower than the 100-ug/l federal Primary Drinking Water Standard.

The compound 1,2-dichlorobenzene was detected in OB-5 and BR-6 at concentrations of 0.13 ug/l and 0.21 ug/l, respectively. A similar concentration was detected in the blank samples. The compound 1,3-dichlorobenzene was detected at 0.05 ug/l and 0.07 ug/l, in BR-3 and BR-6 respectively. The compound 1,4-dichlorobenzene was also detected in a blank sample at a similar concentration.

Dichlorofluoromethane was detected in samples from BR-3 and BR-5 at concentrations of 0.14 ug/l and 0.82 ug/l. Methylene chloride concentrations ranged from 0.15 ug/l to 0.74 ug/l in samples from the bedrock aquifer monitoring wells and 0.11 ug/l to 1.2 ug/l in samples from the overburden monitoring wells. The detected concentrations are similar to levels detected in blank samples. Hence, the methylene chloride concentrations are likely the result of laboratory artifacts.

The concentrations of 1,1-dichloroethane ranged from not detected to 3.1 ug/l in the overburden monitoring well samples and 0.15 ug/l to 0.82 ug/l in the bedrock monitoring well samples. The compound 1,2-dichloroethane ranged from 0.18 ug/l to 3.5 ug/l in the overburden monitoring well samples and not detected to 1.2 ug/l in the bedrock monitoring well samples.

The compound 1,1-dichloroethene ranged from 0.28 ug/l to 0.77 ug/l in the overburden monitoring well samples and from not detected to 2.8 ug/l in the bedrock monitoring well samples. Cis-1,2-dichloroethene ranged from 0.11 ug/l to 190 ug/l in the overburden monitoring well samples and 0.38 ug/l to 730 ug/l in the bedrock monitoring well samples. Trans-1,2-dichloroethene ranged from 0.19 ug/l to 0.33 ug/l in the overburden monitoring well samples and 0.24 ug/l to 0.86 ug/l in the bedrock monitoring well samples.

Tetrachloroethene ranged from 0.08 ug/l to 13 ug/l in the overburden monitoring well samples and 0.11 ug/l to 5.5 ug/l in the bedrock monitoring well samples.

The compound 1,1,1-trichloroethane ranged from 0.07 ug/l to 2.9 ug/l in samples from the overburden monitoring wells and 0.10 ug/l to 2.2 ug/l in samples from the bedrock monitoring well. Trichloroethene ranged from 0.59 ug/l to 1,200 ug/l in the overburden monitoring well samples and 0.80 ug/l to 1,600 ug/l in the bedrock monitoring well samples.

Vinyl chloride was not detected in the overburden monitoring well samples above the 0.5 ug/l detection limit. Vinyl chloride concentrations ranged from below detection limit (0.5 ug/l) to 2.2 ug/l in the bedrock monitoring well samples. Vinyl chloride was detected in BR-2, BR-3, BR-5, and BR-6 at 2.2 ug/l, 1.4 ug/l, 0.82 ug/l, and 0.83 ug/l, respectively.

#### 4.7.1.2 Semivolatile Organic Compounds

Dimethyl phthalate was detected in BR-2 at an estimated concentration of 2 ug/l. Dimethyl phthalate was not detected in any other monitoring well. Bis(2-ethylhexyl)phthalate was detected in OB-2, OB-4, OB-7, and OB-8 at estimated concentrations of 2 ug/l, 1 ug/l, 1 ug/l, and 2 ug/l, respectively, and in OB-1 at a concentration of 22 ug/l.

Review of the semivolatile organic compound analytical data did not suggest an environmental concern. Therefore, the three subsequent groundwater sampling events did not include semivolatile organic compounds.

#### 4.7.1.3 Inorganic Parameters

The concentrations of inorganic parameters for groundwater samples collected in April 1991 are presented and compared to federal Maximum Contaminant Level (MCLs) drinking water standards in Table 4-15. The use of MCLs is for comparison purposes only. Actual cleanup levels for the aquifers, if any, will be addressed in the feasibility and risk assessment studies. The well cluster OB-1 and BR-1 was originally planned as an upgradient sampling location. However, the apparent effects of pumping the on-site production well, W-3, in the vicinity of the OB-1/BR-1 cluster indicates that this cluster is not an upgradient sampling location. Therefore, the concentrations of inorganic parameters were compared to MCLs, if an MCL for the parameter has been proposed.

The groundwater samples for inorganic parameter analyses were submitted as filtered and unfiltered samples. The filtered samples represent the "dissolved" component of groundwater. The dissolved concentration represents the mobile phase of the inorganic parameter.

This discussion focuses on the filtered sample analysis. The unfiltered samples represent the concentrations of inorganic parameters in the "suspended solid" phase of the groundwater sample. The unfiltered parameter concentrations will be utilized during preparation of the feasibility study to evaluate cleanup alternatives and potential interferences due to the suspended solids.

Aluminum concentrations in unfiltered samples ranged from 1,520 ug/l to 16,600 ug/l for overburden monitoring wells and 108 ug/l to 2,290 ug/l in bedrock wells. The relatively high aluminum concentrations in the unfiltered samples are likely the result of suspended aluminum clay minerals resulting from weathering of the red shale formation and particulates of clay from the unconsolidated soil. Therefore, the aluminum concentrations in the filtered samples are more representative of potential impacts of aluminum to the environment. Aluminum was detected in one filtered monitoring well sample, OB-6, at a concentration in excess of the 26-ug/l detection limit. The concentration of aluminum in the filtered OB-6 sample

was 671 ug/l. Based on the groundwater contours for the overburden aquifer (Section 4-5), OB-6 is likely to be an upgradient monitoring well. Therefore, aluminum is not a concern.

Antimony was not detected in any of the unfiltered samples above the 16-ug/l detection limit. Antimony was detected at 17.5 ug/l in the filtered sample from OB-5. However, this concentration is suspect because antimony was not detected in the unfiltered sample, in which the antimony concentration was likely to be higher. However, antimony is a common trace metal found at metal fabrication facilities and BR-5.

Arsenic ranged from not detected above the detection limit of 2 ug/l to 3.8 ug/l in the unfiltered overburden monitoring well samples, and not detected to 2.4 ug/l in the unfiltered bedrock monitoring well samples. The range of concentrations is below the 50-ug/l MCL for arsenic. Arsenic was not detected in any of the filtered samples above the 2-ug/l detection limit.

Barium ranged from 40.2 ug/l to 250 ug/l in the unfiltered overburden monitoring well samples and from 119 ug/l to 361 ug/l in the unfiltered bedrock monitoring well samples. The highest concentration of 361 ug/l is significantly below the 2,000-ug/l MCL for barium. The filtered overburden and bedrock monitoring well samples generally contained lower concentrations than the unfiltered samples.

Beryllium ranged from not detected to 2.4 ug/l in the unfiltered bedrock and overburden monitoring well samples. Although the 2.4-ug/l concentration is above the 1-ug/l MCL for beryllium, the detected levels in the groundwater samples are not significantly different from the beryllium concentration in the method blank.

Cadmium was not detected above the 4-ug/l detection limit in any of the samples. Calcium concentrations ranged from 9,670 ug/l to 41,400 ug/l in unfiltered overburden monitoring well samples and from 11,200 ug/l to 16,100 ug/l in the unfiltered bedrock monitoring well samples. No MCL has been promulgated for calcium; at the levels detected, calcium can be considered a nutrient.

Chromium ranged from not detected to 37.9 ug/l in the unfiltered overburden monitoring well samples and from not detected to 6.4 ug/l in unfiltered bedrock monitoring well samples. These levels are significantly less than the 100-ug/l MCL for chromium. Chromium was detected above the 6-ug/l detection limit in one sample, OB-1, at 6.1 ug/l.

Cobalt ranged from not detected to 112 ug/l in unfiltered overburden monitoring well samples and from not detected to 9.1 ug/l in the unfiltered monitoring well samples. Cobalt ranged from not detected to 84.9 ug/l in the unfiltered overburden monitoring well samples and from less not detected to 4.6 ug/l in the filtered bedrock samples. No MCL has been proposed for cobalt.

Copper ranged from 6.8 ug/l to 27.6 ug/l in the unfiltered overburden monitoring well samples and from 7.3 ug/l to 10.8 ug/l in unfiltered bedrock monitoring well samples. The detected copper concentrations in the unfiltered samples are not significantly different from copper concentrations in the blank samples.

Iron ranged from 1,320 ug/l to 41,100 ug/l in the unfiltered overburden and bedrock monitoring well samples. These concentrations are attributable to iron clay minerals resulting from weathering of the red clays and red shales of the overburden soil and bedrock formation. This is supported by the absence of detectable iron concentrations in every filtered overburden monitoring well sample. The presence of relatively elevated iron concentrations in some of the filtered bedrock samples, up to 23,000 ug/l, may be indicative of breakthrough of the field filtering equipment by particulate iron.

Lead concentrations ranged from not detected to 18.6 ug/l in the unfiltered overburden and bedrock monitoring well samples. Detection of a similar level in the field blank sample suggests that the actual concentration of lead in the groundwater samples was lower.

The concentrations of magnesium and manganese were not considered beyond a cursory review due to the relatively high natural occurrence of these metals in shale and weathered shale. Mercury was not detected above the 2-ug/l detection limit in any of the filtered or unfiltered groundwater samples.

The concentration of nickel ranged from 14.2 ug/l to 42.9 ug/l in the unfiltered overburden groundwater samples and from not detected to 19.7 ug/l in the unfiltered bedrock groundwater samples. These concentrations are significantly lower than the 100-ug/l MCL for nickel. Similar concentrations were detected in the filtered groundwater samples.

Potassium was not considered beyond a cursory review due to its common occurrence in clay minerals and shale. Potassium is a common human nutrient, and no MCL has been promulgated for potassium.

Selenium was detected in one sample, OB-7 (filtered) at a concentration of 2.1 ug/l. Although this concentration was flagged as being "biased low" during the data validation, the 2.1-ug/l concentration is significantly below the 50-ug/l MCL.

Silver was not detected above the 3-ug/l detection limit in any of the filtered or unfiltered samples. Sodium was not considered beyond a cursory review due to its common occurrence in shale minerals.

Thallium was not detected above the 1-ug/l detection limit in any of the groundwater samples. Vanadium ranged from not detected to 35 ug/l in the unfiltered overburden samples. Vanadium was detected in one unfiltered bedrock monitoring well sample, BR-1, at a concentration of 8.0 ug/l. Vanadium was not detected above the 4-ug/l detection limit in any of the filtered samples. The presence of vanadium in the unfiltered overburden monitoring well samples and its approximate absence in the unfiltered bedrock monitoring well samples suggest that vanadium is not migrating from the overburden aquifer to the bedrock aquifer. In addition, the absence of vanadium in the filtered samples suggests that vanadium occurs in the overburden aquifer as a particulate or constituent of a clay mineral.

Concentrations of zinc ranged from 19.3 ug/l to 107 ug/l in the unfiltered overburden monitoring well samples and from 17.3 ug/l to 51.8 ug/l in the unfiltered bedrock monitoring well samples. A similar distribution of zinc concentrations was observed in the

filtered samples, with the highest concentration in the overburden monitoring well sample being 97.7 ug/l and the highest bedrock monitoring well concentration at 66.7 ug/l. All of these concentrations are not considered significantly different from the zinc concentration in the field blank sample. In addition, all of the detected levels are two orders of magnitude lower than the 5,000-ug/l MCL for zinc.

Cyanide was not detected above the 10-ug/l detection limit in the unfiltered samples.

Review of the inorganic data indicated that the inorganic parameter concentrations were not indicative of a potential environmental impact. Therefore, the inorganic parameters were not analyzed during the three subsequent groundwater sampling events.

#### 4.7.2 July 1991 Analytical Results

The second groundwater sampling round was performed on July 10, 1991. Table 4-16 summarizes the analytical laboratory summary sheets presented in Appendix K. Appendix K also presents Dames & Moore's data validation report for the analytical data.

Concentrations of 1,1-dichloroethane ranged from not detected to 14 ug/l (OB-6) in the overburden monitoring well samples and from not detected to 2.2 ug/l in the bedrock monitoring well samples. The concentrations of 1,2-dichloroethane ranged from not detected to 4.5 ug/l in the overburden monitoring well samples and from not detected above the 0.50-ug/l detection limit to not detected above the detection limit in BR-2 for the bedrock monitoring well samples. The concentration of 1,1-dichloroethene ranged from not detected to an estimated value of 0.15 ug/l in OB-6 for the overburden monitoring well samples and from not detected to 2.9 ug/l in the bedrock monitoring well samples.

Concentrations of cis-1,2-dichloroethene ranged from not detected to 47 ug/l in the overburden monitoring well samples and from not detected to 700 ug/l in the bedrock monitoring well samples. Trans-1,2-dichloroethene was not detected above the 0.50- ug/l detection limit in samples from the overburden monitoring wells. Concentrations of trans-1,2-dichloroethene ranged from not detected to 8.4 ug/l in samples from the bedrock monitoring wells.

Methylene chloride ranged from not detected to 4.2 ug/l in the overburden and bedrock monitoring well samples. These levels of methylene chloride are generally attributable to laboratory artifacts.

Tetrachloroethene concentrations ranged from not detected to 14 ug/l in the overburden monitoring wells and from not detected to 6.6 ug/l in the bedrock monitoring wells. The compound 1,1,1-trichloroethane ranged from not detected to an estimated value of 0.38 ug/l in the overburden monitoring wells and from not detected to 2.1 ug/l in the bedrock monitoring wells.

Trichloroethene ranged from 5.9 ug/l to 240 ug/l in the overburden monitoring wells and from 0.46 ug/l to 1,900 ug/l in the bedrock monitoring wells. Concentrations of

trichloroethene in monitoring wells OB-2, OB-3, OB-4, OB-6, OB-7, BR-1, and BR-6 were similar to the 3.4-ug/l concentration in the trip blank sample.

Vinyl chloride was not detected above the 0.50-ug/l detection limit in the overburden monitoring wells and from not detected to 2.0 ug/l in the bedrock monitoring wells. Vinyl chloride was detected in two bedrock monitoring wells, BR-3 and BR-8, at 2.0 ug/l and 0.93 ug/l, respectively.

M-P xylene was detected in one monitoring well, OB-4, at an estimated concentration of 0.11 ug/l.

#### 4.7.3 September 1991 Analytical Results

Table 4-17 summarizes the analytical results for groundwater samples collected on September 17 and 18, 1991. The analytical laboratory summary sheets and Dames & Moore's data validation report are presented in Appendix L.

Benzene was not detected in the overburden monitoring well samples. However, benzene was detected in bedrock monitoring wells BR-2, BR-3, and BR-5 at concentrations of 0.080 ug/l, 0.17 ug/l, and 0.12 ug/l, respectively.

Chloroethane was detected in OB-2, BR-3, and BR-5 at 0.31 ug/l, 0.31 ug/l and 0.32 ug/l, respectively. Chloroethane was not detected during previous sampling events.

Chloroform was detected in OB-2, OB-8, BR-2, BR-3, BR-4, BR-5, and BR-7 at concentrations ranging from 0.060 ug/l to 0.25 ug/l. These concentrations are not considered significantly different from the 0.16-ug/l concentration of chloroform detected in the trip blank sample.

Chloromethane was detected in OB-5 and BR-1 at 4.3 ug/l and 1.0 ug/l, respectively.

Concentrations of 1,1-dichloroethane ranged from not detected to 10 ug/l in the overburden monitoring wells and from not detected to 2.7 ug/l in the bedrock monitoring wells. Cis-1,2-dichloroethene ranged from not detected to 67 ug/l in the overburden monitoring wells and from not detected to 610 ug/l in the bedrock monitoring well samples. Concentrations of trans-1,2-dichloroethene ranged from not detected to 0.34 ug/l in the overburden monitoring well samples and from not detected to 0.53 ug/l in the bedrock monitoring wells.

Methylene chloride was detected in every bedrock and overburden monitoring well sample at concentrations similar to the concentration detected in the trip blank. Therefore, the methylene chloride concentrations are attributable to laboratory or glassware artifacts.

Tetrachloroethene concentrations ranged from not detected to 17 ug/l in the overburden monitoring wells and from not detected to 8.4 ug/l in the bedrock monitoring wells. The compound 1,1,1-trichloroethane ranged from not detected to 6.2 ug/l in the overburden monitoring wells and from not detected to 2.5 ug/l in the bedrock monitoring wells.

Trichloroethene ranged from not detected to 130 ug/l in the overburden monitoring wells and from 0.3 ug/l to 1,400 ug/l in the bedrock monitoring wells. Vinyl chloride was not detected in the overburden monitoring wells above the 0.50-ug/l detection limit. Vinyl chloride was detected in BR-3 and BR-5 at 0.89 ug/l and 0.42 ug/l (estimated), respectively.

Carbon disulfide was detected in every monitoring well sample, from 0.080 ug/l to 17 ug/l. These concentrations were similar to the 3.1-ug/l and 13-ug/l carbon disulfide concentrations detected in the trip and field blanks. Dames & Moore's experience is that carbon disulfide is a common cross-contaminant from latex gloves. The occurrence of carbon disulfide in every sample, trip and field blanks included, could be the result of an artifact related to use of latex gloves in the laboratory.

#### 4.7.4 November 1991 Analytical Results

Table 4-18 summarizes the analytical results for groundwater samples collected on November 4, 1991. The analytical laboratory sheets and Dames & Moore's data validation report are presented in Appendix M. 1,1-Dichloroethane was detected in OB-2, OB-5, OB-8, BR-2, BR-3, and BR-5 at 16 ug/l, 3.2 ug/l, 3.5 ug/l, 0.92 ug/l, 2.2 ug/l, and 2.5 ug/l, respectively. 1,2-Dichloroethane was detected in OB-5, OB-8, and BR-5 at 2.6 ug/l, 4.3 ug/l, and 2.6 ug/l, respectively.

1,1,1-Trichloroethane was detected in OB-2, OB-5, OB-8, BR-2, BR-3, BR-5, and BR-7 at 7.3 ug/l, 2.3 ug/l, 2.1 ug/l, 0.67 ug/l, 1.5 ug/l, 2.5 ug/l, and 0.99 ug/l, respectively. 1,1-Dichloroethene was detected in BR-3 at 2.4 ug/l. Cis-1,2-dichloroethene was detected in OB-2, OB-5, OB-8, BR-2, BR-3, BR-4, BR-5, BR-7, and BR-8 at 160 ug/l, 30 ug/l, 49 ug/l, 88 ug/l, 580 ug/l, 14 ug/l, 170 ug/l, 10 ug/l, and 530 ug/l, respectively.

Tetrachloroethene was detected in OB-6, OB-7, BR-6, and BR-7 at 17 ug/l, 1.9 ug/l, 8.8 ug/l, and 2.7 ug/l, respectively. Trichloroethene was detected in OB-2, OB-5, OB-6, OB-7, OB-8, BR-2, BR-3, BR-4, BR-5, BR-6, BR-7, and BR-8 at concentrations of 170 ug/l, 48 ug/l, 2.5 ug/l, 2.0 ug/l, 110 ug/l, 400 ug/l, 1400 ug/l, 120 ug/l, 780 ug/l, 3.4 ug/l, 83 ug/l, and 1200 ug/l, respectively. Vinyl chloride was detected in BR-5 at an estimated concentration of 0.50 ug/l.

#### 4.7.5 Groundwater Quality Trends

Figures 4-30 and 4-31 show the distribution of volatile organic compounds in the overburden and bedrock wells, respectively, for the April 1991, July 1991, September 1991, and November 1991 groundwater sampling events. Review of the total volatile organic compound data indicates that the sum of trichloroethene and cis-1,2-dichloroethene generally accounts for at least 90 percent of the total volatile organic compound concentrations. Figure 4-32 presents the total volatile organic compound concentrations in the overburden monitoring wells for the four rounds of groundwater sampling. Figure 4-33 presents the total volatile organic compound concentrations for the bedrock monitoring wells for the four rounds of groundwater sampling. The concentration of volatile organic compounds tends to be higher in the bedrock monitoring wells than in the overburden monitoring wells. Figure 4-33 shows the 2,000-ug/l total volatile

organic compound concentration contours in the bedrock aquifer for the three rounds of groundwater sampling. The axis of the 2,000-ug/l contour is oriented east to southeast, parallel to the direction of groundwater flow. The groundwater flow direction and the axis of the plume were better defined during the Phase II investigation as discussed in Section 5.0 of this report. The magnitude of total volatile organic compound concentrations in BR-2 (586.8 ug/l to 1,874.44 ug/l) may suggest the potential for an upgradient source of volatile organic compounds. However, this opinion concerning potential upgradient sources has not been fully substantiated. It is possible that migration of VOCs from the site to BR-2 has occurred through bedrock bedding planes.

The concentration of total volatile organic compounds in the overburden monitoring wells shows a different distribution pattern than the bedrock monitoring wells. The highest concentrations of total volatile organic compounds in the bedrock wells occurred in BR-2, BR-3, BR-5, and BR-8. The distribution of total volatile organics in the overburden monitoring wells shows elevated concentrations in OB-2, OB-5, and OB-8. The total volatile organic compound concentrations in OB-3 are significantly lower than the total concentrations in the remaining three overburden monitoring wells along the axis of the 2,000-ug/l contour identified for the bedrock aquifer. The relatively high measurements of total volatile organic compounds in OB-2 (1,292.99 ug/l) and OB-8 (1,330.1 ug/l) for the April 2, 1991, data as compared to the two monitoring wells located between OB-2 and OB-8, OB-3 (0.76 ug/l) and OB-5 (571 ug/l), could suggest different sources of volatile organics contributing to the overburden monitoring wells.

The elevated concentrations of contaminants found in the overburden in the April round of samples from OB-2, -5, and -8 could be due to the seasonally elevated ground water table coming into contact with residual soil contamination. This conclusion is supported by the high OVA measurement (30-40 ppm above background) shown on the boring log for OB-2 just below the water table in March. A similar OVA reading (20 ppm) is shown on the boring log for OB-3. OB-3, however, was screened above this zone and is, therefore, not affected by it. No significant measurements were recorded during the drilling of OB-5, or -8, or in samples collected in boring A/K9A.

Figures 4-34 and 4-35 summarize the trichloroethene data for four rounds of groundwater sampling for the bedrock and overburden aquifers, respectively. Figures 4-36 and 4-37 summarize the cis-1,2-dichloroethylene data for three rounds of groundwater sampling for the bedrock and overburden aquifers. The concentration of trichloroethene (TCE) in the bedrock aquifer has not varied significantly with time.

Trichloroethene concentrations have varied significantly between sampling events in the overburden monitoring wells. For example, the trichloroethene concentration in OB-8 varied from 1,200 ug/l on April 2, 1991, to 130 ug/l on September 17, 1991. In contrast, the concentration of trichloroethene in BR-8 (1,400 ug/l) has been consistent over the same period of time.

The variability of trichloroethene concentrations in the overburden aquifer could be related to seasonal flushing of soil during higher infiltration periods, such as spring and late fall. The results of the November 1991 analytical data will be reviewed with regard to potential

seasonal trends in the concentration of trichloroethene. The highest concentration of TCE in the soil of 1,400 mg/kg was detected in sample R/A7. This concentration does not indicate a source capable of producing the TCE concentrations greater than 2000 ug/l detected in the groundwater samples.

The consistent linear trend in trichloroethene concentrations in bedrock monitoring wells BR-2, BR-3, BR-5, and BR-8 suggests that the source of TCE in the bedrock aquifer may not be in the overlying soil. The concentrations in the four bedrock monitoring wells are consistently above 1,000 ug/l and show very little variation between sampling events for each individual monitoring well. The lack of variability in trichloroethene concentrations could suggest proximity to a potential source area that is isolated from soil flushing.

Tetrachloroethene (PCE) has been detected consistently in the OB-6/BR-6 and OB-7/BR-7 well clusters and not in any other well cluster. PCE is generally found in association with TCE in degreasing solvents. However, with time and biological activity PCE generally degrades to TCE. The presence of PCE in the sidegradient monitoring well clusters OB-6/BR-6 and OB-7/BR-7 on the Allied Steel property and the absence of PCE in the monitoring wells along the axis of the TCE distribution (OB-2/BR-2, OB-3/BR-3, OB-5/BR-5, and OB-8/BR-8) may suggest an additional and separate source of volatile organic compounds to groundwater in the study area.

#### 4.8 REMOVAL ACTION

On the effective date of May 14, 1990, USEPA Region III and Rockwell entered into an Administrative Order by Consent (AOC) to perform a removal action. Under the conditions of the AOC, Rockwell agreed, without admitting liability, to conduct a removal action at the subject site that included installation of carbon filtration systems and periodic groundwater sampling. The AOC stipulated that five activated carbon filtration systems should be installed at homes identified as having had TCE detected at concentrations above the MCL. Rockwell agreed to perform quarterly sampling of water from the homes with filtration systems and semi-annual sampling of tap water from 16 additional residences or businesses in the vicinity of the site.

The purpose of this section is to review the analytical data collected during the removal action in order to evaluate the extent of TCE impact to groundwater in the vicinity of the site. Construction details for the domestic and commercial groundwater supply wells are not available. Hence, the exact dimensions of the TCE plume cannot be evaluated implicitly. However, Dames & Moore's opinion is that a fairly accurate evaluation of the degree and extent of TCE within the bedrock aquifer can be made utilizing the existing data. Much of the text of this section provides a summary of the removal action to date.

##### 4.8.1 Summary of Removal Action Sampling Activities

Dames & Moore, on behalf of Rockwell, has monitored domestic and business supply water wells located along U.S. Route 724, Wells Road, U.S. Route 883, and Old Schuylkill Road since June 1990. Figure 4-38 presents the sampling locations for the removal action and an estimate of the dimensions of the TCE plume. However, the Phase II (Section

5.0) investigation has indicated that the plume extends to well location DBR-9 where a total volatile organic compound concentration is in excess of 1,000 ug/l was detected. On a quarterly basis, Dames & Moore collects groundwater samples at midfilter and tap locations at five businesses located along U.S. Route 724 and from one residential or private well that supplies water to two single-family homes located on U.S. Route 883 (total of six well locations). The commercial establishments with carbon filtration systems include two businesses located north or northeast of the Recticon/Allied Steel site: Bell Telephone (22A), and Total Recovery, Inc. (1A). Three businesses with filtration systems are located south of the site: Keystone Auto (18A), Leisure Equipment (19A), and Auto Quest (59A). The owner of two rented dwellings is Mr. Fredrick Hansberry, and the location identification of the well for the two homes is 32A (Figure 4-38).

Groundwater is sampled semi-annually at residences and businesses located along Wells Road, U.S. Route 724, Old Schuylkill Road, and U.S. Route 883. The original number of residences and businesses listed in the AOC for semi-annual sampling was 16, but this number was increased to 18 after Rockwell and USEPA agreed upon modifications to the original list of residences.

The Lederer residence (36A) is one residential well that was omitted from the list of homes slated for semi-annual sampling. This home is located 1,300 feet northwest of the Recticon/Allied Steel site and had no detected VOCs in groundwater samples collected by Dames & Moore in January 1990 and July 5, 1990. The Lederer residence (36A) had previously been misplaced in Figure 1 of Dames & Moore's report dated March 7, 1990, entitled "Domestic Water Quality Assessment." In Figure 4-38 of this report, the residence identified as 60A is located south of Leisure Equipment (19A) and south of the Recticon/Allied Steel site. The apartment complex structure, erroneously labelled as 36A on Figure 1 of the March 1990 report, has more recently been referenced by Dames & Moore as the Schurr apartment building (60A). With USEPA approval, this rental property was added in July 1990 to the list of homes sampled semi-annually due to its proximity to Leisure Equipment (19A) and AutoQuest (59A).

Two wells were added to the list of wells to be sampled semi-annually when Dames & Moore was informed by local residents of the existence of two wells, not one well, in use at their property. Two wells are in use at Transport System, Inc.: one is located at the Transport System, Inc. and Box Outlet building (23A), and the other well provides water to the adjacent leased building, occupied in 1990 and 1991 by Prime Time Pets (23B). Heylman Sporting Goods is supplied with water from one well (26A), while the adjoining property, an apartment building, receives water from a separate well (26B).

Therefore, the removal program consists of 22 individual businesses and residential locations with 24 water wells that are sampled semi-annually (18 wells, 16 locations) or quarterly (6 wells with carbon filtration systems). The businesses and residences lie primarily in a northwesterly trending line along Route 724 and Old Schuylkill Road. A few homes are located along Wells Road and U.S. Route 883.

#### 4.8.2 January 1990 Groundwater Sampling and Analyses Program

Dames & Moore, on behalf of Rockwell, conducted a groundwater sampling and analyses program in the vicinity of the Recticon/Allied Steel site. The program was conducted from January 8 through 11, 1990. Water samples were collected and split between USEPA representatives and Dames & Moore from 47 domestic and business supply wells located in the vicinity of U.S. Route 724 and Wells Road in Parker Ford, Pennsylvania. The list of residences from which water samples were collected is presented in Table 4-19. This program was conducted based on analytical results of sampling performed by the Pennsylvania Department of Environmental Resources (PADER) in 1979 and 1980 (see Table 3-1 for analytical data).

Water samples were collected from taps into laboratory-supplied bottles. Table 4-20 lists the corresponding sample identification number, well location, date sampled, and detected volatile organic compounds, along with notes about the tap source or location.

Water samples collected by Dames & Moore were analyzed for VOCs by USEPA Method 624 at Lancaster Laboratories, Inc. (Lancaster Labs) of Lancaster, Pennsylvania. Reportedly, water samples collected by USEPA representatives were analyzed by USEPA Methods 601 and 602. The results of the January 1990 investigation indicate that VOCs were present at or above the laboratory detection limit in 7 of the 47 sampled domestic and business supply wells.

#### 4.8.3 Removal Actions to Date

Dames & Moore submitted to USEPA a Removal Action Work Plan dated May 23, 1990. The work plan was approved by USEPA in a letter to Rockwell dated May 28, 1990. Rockwell received the approval letter on May 29, 1990, the start date for the AOC actions. The work plan described the procedures Dames & Moore would follow in order to obtain access agreements from homeowners or landowners, and the procedures for installation and the design of carbon filtration systems and sampling of well water. Dames & Moore identified Culligan-Funk of Eagleville, Pennsylvania, as the installation subcontractor.

The work plan stated that water samples would be collected in accordance with Subsection 8.3(e) of the AOC. Identified methods for analysis of groundwater stated in the work plan included USEPA Methods 601, 624, 8010, or 8240. The work plan also stated that Dames & Moore, on behalf of Rockwell, would provide USEPA with progress reports in accordance with Section XVIII of the AOC.

Dames & Moore, on behalf of Rockwell, wrote letters dated May 15 and 16, 1991, to five landowners in anticipation of USEPA's approval of Dames & Moore's work plan. The five landowners' names and addresses are listed in Attachment B of the AOC (the residences identified to receive filter systems). Dames & Moore received four signed access agreements within a week from landowners. One letter was delayed (the letter sent to Fredrick Hansberry). Mr. Hansberry, who was out of town, signed the access agreement on May 29, 1990, and promptly returned it to Dames & Moore. Activated carbon filter installation commenced on June 5, 1990. Five filtration systems were installed by the close of business on June 7, 1990.

Dames & Moore collected samples of well water at midfilter and tap locations at the five residences with filtration systems on June 20, 1990. The results of this sampling round are presented in Table 4-20.

Dames & Moore, on behalf of Rockwell, mailed access agreement letters to the residences listed in Appendix C of the AOC (total of 16 residences) on May 29, 1990. The access agreements were signed and returned to Dames & Moore. On July 5, 1990, Dames & Moore sampled tap water from the 16 residences of the persons listed on Attachment C of the AOC who had granted Dames & Moore access to their tap water. A few residents did not return the signed access agreements to Dames & Moore until mid-July. The water from their homes was sampled on July 30, 1990.

In a letter dated June 19, 1990, from the USEPA to Rockwell, the USEPA requested that Dames & Moore collect a water sample from AutoQuest and add the facility to the list of wells to be sampled semi-annually. According to USEPA's letter, the owner of AutoQuest had informed USEPA of an odor emanating from his well water. The AutoQuest building was not included in the January 1990 sampling program because it was vacant.

A water sample was collected on June 20, 1990, from AutoQuest with water samples from the five wells with filtration systems. These samples were analyzed by USEPA Method 8240 at Lancaster Labs. The addition of AutoQuest to the list of residences to be sampled semi-annually was confirmed in a progress report letter to USEPA dated July 2, 1990.

Tap water samples were collected by Dames & Moore on July 5, 1990, from homes listed in Attachment C of the AOC (semi-annual sampling). Tap water samples were analyzed for VOCs by Lancaster Labs by USEPA Method 624. The results of this sampling round are presented in Table 4-20.

In a letter dated July 10, 1990, Dames & Moore requested access for semi-annual sampling of tap water at the apartment building located south of Leisure Equipment on U. S. Route 724. This apartment building is owned by Mr. and Mrs. Clarence Schurr, who granted Dames & Moore access to collect a water sample semi-annually.

The tap water sample collected at AutoQuest on June 20, 1990, contained two VOCs at concentrations that exceeded USEPA's proposed or final MCLs for public drinking water. These VOCs were trans-1,2-dichloroethene (trans-1,2-DCE) at 460 ug/l (proposed MCL in 1990 was 100 ug/l) and trichloroethene (TCE) at 1,000 ug/l (final MCL was 5 ug/l). After Dames & Moore received the preliminary analytical results from Lancaster Labs, Dames & Moore contacted Rockwell and USEPA on July 11, 1990, and informed each party of the preliminary analytical results. After consultation with Rockwell, Dames & Moore informed USEPA that Rockwell would agree to install a carbon filtration system at AutoQuest and monitor the well water quarterly.

A carbon filtration system was installed at AutoQuest on July 20, 1990. Tap and midpoint water samples were collected by Dames & Moore on July 30, 1990. A few tap water samples were also collected on July 30, 1990, from residences that were not sampled earlier because no one was home, the property was vacant, and/or no access had been granted.

Samples of water were collected quarterly from residences with filtration systems as required by the AOC. Samples were collected on October 10, 1990; January 11, 1991; April 1, 1991; and July 1, 1991. The results of these sampling rounds are presented in Table 4-21.

No detectable concentrations of VOCs were identified in the mid and post-filter water samples collected from the five wells with filters on June 20, 1990, with the exception of acetone, which was detected at concentrations as high as 17 ug/l. No detectable levels of VOCs were found in the midfilter or tap water samples collected at AutoQuest on July 30, 1990.

Mid and post-filter samples were collected on October 10, 1990, and January 11, 1991 (the second and third quarterly sampling rounds, respectively). The samples were analyzed by Lancaster Labs using USEPA Method 601 (October sampling round) and Methods 601 and 602 (January sampling round). No detectable concentrations of VOCs were identified in the samples collected in October 1990. Trace amounts of two VOCs were detected in four wells sampled in January 1991. The wells in which trace amounts of VOCs were detected include: (1) Total Recovery, Inc. tap and midfilter (1 ug/l of methylene chloride); (2) Keystone Auto Center, Inc. tap (1 ug/l of methylene chloride); (3) Bell Telephone tap (2 ug/l of methylene chloride); and (4) AutoQuest midfilter (2 ug/l of toluene). Most of these VOC concentrations are at or near the laboratory's quantitation limit (1 ug/l) and far below the MCLs for public drinking water.

Tap and midfilter water samples collected on April 1, 1991, and July 1, 1991 (fourth and fifth quarterly sampling rounds, respectively), at the six residences with filtration systems did not contain detectable levels of VOCs with the exception of two samples. A trace amount of toluene (1 ug/l) was detected in the AutoQuest midfilter water sample collected on July 1, 1991. The Hansberry apartment midfilter sample collected on July 1, 1991, contained a trace amount of 1,2-dichloroethene (1 ug/l).

Tap water samples were collected by Dames & Moore at the residences listed in Attachment C of the AOC on July 5, 1990; January 11, 1991; and July 2, 1991. The results of these sampling rounds are presented in Table 4-22. No detectable concentrations of VOCs were found in samples collected on July 5, 1990, with the exception of 6 ug/l of toluene detected in the sample from Tyson's Body Shop (25A). No detectable concentrations of VOCs were found in three tap samples collected on July 30, 1990.

The second semi-annual sampling round was conducted on January 11, 1991. Trace amounts of two VOCs were detected in five wells. The wells in which trace amounts of VOCs were detected include: (1) Chestmont Carpet Company (2 ug/l of methylene chloride and 4 ug/l of 1,1,1-trichloroethane); (2) Transport System, Inc. leased building (occupied at the time by Prime Time Pets, 1 ug/l of methylene chloride); (3) Leighton tap (1 ug/l of methylene chloride); (4) Overfield tap (1 ug/l of methylene chloride and 1 ug/l of 1,1,1-trichloroethane); and (5) Heylman Sporting Goods (4 ug/l of 1,1,1-trichloroethane).

The third semi-annual sampling round was conducted on July 2, 1991. Trace amounts of three VOCs were detected in five wells. None of the detected concentrations of VOCs in tap samples exceeded MCLs for public drinking water. The three detected VOCs include trichloroethene, 1,1,1-trichloroethane, and toluene. Trace amounts of trichloroethene

were detected in the following wells: (1) Lederer Greenhouse, 2A (1 ug/l); (2) Lederer house tap, 4A (1 ug/l); and (3) Chestmont Carpet, 17A (1 ug/l). Trace amounts of 1,1,1-trichloroethane were detected in the Overfield, 3A (1 ug/l) and Chestmont Carper, 17A (3 ug/l) tap samples. Toluene was detected in a sample collected from Tyson's Body Shop, 25A (5 ug/l).

#### 4.8.4 Future Actions

Based on the analytical data for the subject site received and reviewed by Dames & Moore during the Phase I investigation, it appears that the concentrations of TCE and other VOCs in well water at the residences tested have remained constant or decreased from January 1990 through July 1991. The contaminants of concern that have exceeded USEPA MCLs in well water have been trichloroethene and 1,2-dichloroethene, which are effectively removed by the carbon filtration systems. The removal action activities continued throughout the Phase II investigation and will proceed after submittal of this report. All data generated have been submitted to USEPA as Removal Action progress reports. The data for subsequent sampling events has not shown results significantly different from those summarized for the Phase I investigation.

Trace amounts of VOCs have been detected at some of the residences listed in Attachment C of the AOC for semi-annual sampling. Most of these VOCs were detected at the laboratory's quantitation limit (1 ug/l) and well below the MCL for public drinking water systems. Thus, the removal actions performed by Dames & Moore on behalf of Rockwell have been consistent with the AOC.

#### 4.9 ECOSYSTEMS INVESTIGATION

During January 1991, Dames & Moore performed an ecosystems investigation of the site. It involved delineation of wetlands, review of site topography, identification of soil types and site vegetation, review of potential habitats on site, a limited assessment of the potential for threatened and endangered species at the site, and a presentation of prime farmland in the site vicinity. The site is approximately 6 acres (including both the former Recticon and Allied Steel sites) and lies within the drainage basin of the Delaware River. The wetlands delineation was performed utilizing the methodology and documentation outlined in the Federal Manual for Identifying and Delineating Jurisdictional Wetlands (Federal Interagency Committee for Wetlands Delineation, 1989). This methodology states that a wetland exists if any two of the three following criteria are present: hydric soils, hydrophytic vegetation, and shallow water table.

##### 4.9.1 Wetlands Delineation

A wetlands boundary was delineated for the site during the Phase I investigation. Based on recent regulatory developments and discussion with PADER, the area previously identified as wetlands has now been redefined as a waterway. This reclassification is based on the observation that the observed wetland vegetation does not extend beyond the bank of the waterway and the waterway has well-defined banks and bed. The waterway boundary is shown

on Figure 4-39. The waterway delineated for the site is limited to a 0.10-acre portion of the Allied Steel facility.

As discussed in subsection 4.9.2, the Chester County Soils Survey (United States Department Of Agriculture, Soil Conservation Service) indicates that three soil types occur within the vicinity of the site: Bucks silt loam, Penn silt loam, and Readington silt loam. Although the Readington has a hydric component, it was not identified on the site. The waterway identified on the site is related to the presence of a drainage ditch and are not directly associated with a particular soil series.

The vegetation on the majority of the Allied Steel portion of the site is disturbed on a semi-regular basis by activities associated with normal property maintenance. The vegetation along the eastern edge of the waterway is an unusual mixture of upland and wetland plant species; this mixture is primarily due to the presence of a large amount of fill that was placed to provide a bed for the railroad tracks. The vegetation along the western edge of the waterway is mowed on a semi-regular basis, therefore, the vegetation is not very well established. Because of these conditions on this portion of the site, soils and hydrology were relied upon to accurately delineate the boundary of the waterway.

The Phoenixville, Pennsylvania, National Wetlands Inventory indicates that no wetlands have been mapped on the site. The closest inventoried wetland lies approximately 2,500 feet to the east (along the Schuylkill River) and is classified as Riverine, Lower Perennial, Open Water wetland, with a permanent water regime (R2OWH). The majority of the wetlands in the vicinity of the site are associated with the Schuylkill River or Pigeon Creek.

#### 4.9.2 Site Soil and Vegetation

Three soil series are mapped on the site. Two other soil series are mapped near the site (see Figure 4-40). The soil series mapped on the site are the Bucks silt loam, 3 to 8 percent slopes, moderately eroded (BxB2); the Penn silt loam, 3 to 8 percent slopes, moderately eroded (PmB2); and the Readington silt loam, 0 to 3 percent slopes (RdA). The soil series mapped near the site are the Penn silt loam, 8 to 15 percent slopes, moderately eroded (PmC2); the Brandywine loam, 3 to 8 percent slopes, moderately eroded (BrB2); and the Roland silt loam, dark surface (Rp).

The USDA Soil Conservation Service (SCS) Soil Survey map, Figure 4-40, indicates that the site is underlain by BxB2, RdA, and PmB2 soils. The land immediately north of the Recticon/Allied Steel site is mapped as BxB2 and RdA soils. The land east of the site, between the site and the Schuylkill River, is composed of BxB2, RdA, and Rp soils. The land to the south is mapped as PmB2 and PmC2 soils.

#### AREA 1

The area labelled as "AREA 1" on Figure 4-39 is the only wetland that occurs on the Rockwell/Allied Steel site. It is classified as a Palustrine, Emergent, Nonpersistent (PEM2) wetland. The predominant vegetation in the area delineated as a wetland consists of Acer saccharinum (silver maple) and Fraxinum pennsylvanica (green ash) in the overstory;

Cornus amomum (silky dogwood) in the understory, and Impatiens capensis (jewel weed), Rubus pennsylvanicus (blackberry), Epilobum coloratum (purple-leaved willow-herb), and Solidago spp. (goldenrod) in the groundcover. The soils in the delineated wetlands had a profile typical to the one described below:

0 to 6 inches - Silty loam with a Munsell color of 5YR 5/2 mottled with 5YR 4/6

6 to 12 inches - Silty loam with a Munsell color of 5YR 3/2 mottled with 7.5YR 4/6

12 to 18 inches - Silt loam with a Munsell color of 7.5YR 4/2 mottled with 5YR 3/3

## AREA 2

The area labelled as "AREA 2" on Figure 4-39 is the upland portion of the Allied Steel portion of the site. It is classified as upland because it possesses none of the characteristics necessary to delineate it as a wetland. The predominant vegetation in this area consists of various grass species and Rubus pennsylvanicus (blackberry), and Solidago spp. (goldenrod). The soils in this area have a profile typical of the one described below:

0 to 8 inches - Silty loam with a Munsell color of 5YR 4/6 monochromatic

8 to 16 inches - Silty loam with a Munsell color of 7.5YR 4/6 monochromatic

16 to 24 inches - Silt loam with a Munsell color of 5YR 3/3 monochromatic

## AREA 3

The area labelled as "AREA 3" on Figure 4-39 is the Recticon portion of the site. It is classified as a upland because it possesses none of the characteristics necessary to delineate it as a wetland. The predominant vegetation in this area consists of various grass species. No soil samples were taken in this area because it is an obvious upland.

### 4.9.3 Site Topography and Drainage

The site map (Figure 3-1) presents the site location superimposed on a portion of the Phoenixville 7.5-minute United States Geological Survey topographic quadrangle for the site vicinity. The site topography slopes from the western portion of the Recticon facility, at a maximum elevation of 140 feet above mean sea level (MSL) to the eastern portion of the Allied Steel property, at a minimum elevation of approximately 125 feet MSL. The primary drainage feature of the site is related to the ditches that drain the areas upgradient of the former Recticon and Allied Steel facilities to the tributary of Pigeon Creek located south of the Allied Steel property. The closest stream (Pigeon Creek) lies approximately 1,800 feet southeast of the site. According to the USGS topographic map, the Schuylkill River lies approximately 2,500 feet east of the site.

The majority of the land north and east of the site is actively cultivated. The land to the south and west has been developed with private residences and commercial establishments.

#### 4.9.4 Gamelands, Natural Areas, and Wild Areas

The Pennsylvania Game Commission maps all natural areas, refuge areas, and wild areas on their Sportsmen's Recreation Maps. The only State Game Land (No. 234) in the vicinity of the site lies approximately 3,500 feet to the east, across the Schuylkill River, in Limerick Township, Montgomery County (see Figure 4-41). There are natural, refuge, or wild areas within the boundaries of State Game Land 234 (SGL 234). SGL 234, located on a large meander along the Schuylkill River, encompasses approximately 163 acres and is transected north to south by a township road. SGL 234 has a storage building and a parking area within its boundaries. The game land is used primarily as food plots, with a small area in the northwest corner dedicated to wildlife propagation.

According to the Pennsylvania Game Commission's Southeast Region Map of Public and Leased Lands (see Figure 4-42), there are numerous Cooperative Farm Game Lands west and south of the site. The owners of Cooperative Farm Game Lands have an agreement with the Pennsylvania Game Commission to allow the harvesting of game animals on their land. The closest Cooperative Game Land lies approximately 1,000 feet west of the site.

#### 4.9.5 Pennsylvania Scenic Rivers Inventory

The Pennsylvania Scenic Rivers Program, Scenic Rivers Inventory is the first inventory of Pennsylvania waterways established to assess the natural, cultural, aesthetic, historic, scientific, and recreational values of Pennsylvania waterways. This program was revised by the Bureau of Water Resources Management, Division of Rivers and Wetlands Conservation, and the Pennsylvania Wild and Scenic Rivers Task Force: Harrisburg, in April 1990. Each waterway appearing in the inventory was nominated and evaluated on the basis of indigenous quality and unique, outstanding, or irreplaceable values and water quality data. The final verification of the waters' eligibility for inclusion in the Scenic Rivers System depends upon the results of on-site inventory, investigation, and evaluation that will be conducted in conjunction with future scenic river studies.

##### The Schuylkill River

The Pennsylvania Scenic Rivers System has designated 124.8 miles of the Schuylkill River as part of the system. The portion of the Schuylkill River closest to the Recticon/Allied Steel site is the segment that extends between the Douglasville Bridge and the Norristown Dam (34.2 miles). This segment has a designation of Modified Recreational use, First Priority - Group A, and is in Water Quality Group 2.

Modified Recreational - This category is the lowest priority designation for rivers or sections of rivers in which the flow may be regulated by upstream control devices. Low dams are permitted in the reach as long as they do not increase the river beyond bank-full width. These reaches are used for human activities that do not subsequently interfere with public use of the streams or enjoyment of their surroundings. This rating also includes a Proposed Management Classification.

First Priority - Group A - This category is a designation given by the Wild and Scenic Rivers Task Force, which represents their recommended priority for detailed study. This designation is the highest on the priority list.

Water Quality Group 2 - This designation indicates that the waterway does not currently meet State Water Quality Standards, but will meet those standards in 0 to 10 years.

#### 4.9.6 Flood Mapping

The Federal Emergency Management Agency, Flood Insurance Rate Map (FIRM) for the Township of East Coventry, Pennsylvania, dated February 17, 1982, indicates the extent of the flood hazard areas in East Coventry Township. The FIRM indicates that the entire Recticon site lies outside of the 500-year and 100-year flood hazard areas and that a portion of the Allied Steel site lies within the 500-year and 100-year flood hazard areas.

The eastern and southeastern portions of the Allied Steel site lie within the 500-year flood hazard area, and the drainage ditch and southeastern portion of the site lie within the 100-year flood hazard area. The only portion of the Allied Steel site outside the 500-year and 100-year flood hazard areas is the northwest corner of the site. A copy of the FIRM, indicating the site boundary, is presented as Figure 4-43.

#### 4.9.7 Habitat

Based on a review of the site vegetation, soils, and degree of development, the site does not appear to include substantial wildlife habitat. Due to the absence or minor concentrations of semivolatile and volatile organic compounds in surface soil and surface water on the site, there are no identifiable impacts of the site on nearby habitat such as the cultivated field to the east of the Allied Steel facility. The wetlands vegetation within the drainage ditch on the Allied Steel site appears to be thriving, with no signs of distress.

#### 4.9.8 Threatened and Endangered Species

Dames & Moore contacted the Pennsylvania Wildlife Service to identify threatened and endangered species in the area. The sole species identified in the area as threatened and endangered is the blue heron.

#### 4.9.9 Prime Farmland

Figure 4-44 presents a summary of the prime farmland, as delineated by USDA, for the vicinity of the site.

#### 4.9.10 Potential Environmental Receptors

Data gathered during this investigation indicate PAHs, copper, and zinc downgradient of the site. It is Dames & Moore's opinion that these concentrations are indicative of anthropogenic sources unrelated to site activities. Therefore, without a surface exposure route

resulting from site activities, an assessment of potential environmental receptors (i.e., small animals and plantlife living on-site) was not performed.

#### 4.9.11 Archaeological Concerns

Dames & Moore contacted the Pennsylvania state historical preservation officer to identify the historical value of the site. The response to Dames & Moore's inquiry indicated that a Phase I archaeological study would be required to assess the historical value of the site. The Phase I archaeological investigation will be implemented prior to performing intrusive remedial activities.

#### 4.9.12 Fish and Wildlife

Negative determinations from the U.S. Fish and Wildlife Service and the Pennsylvania Department of Environmental Resources are presented in Appendix Y.

T  
A  
B  
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S

AR302057

TABLE 4-1

ANALYTICAL PARAMETERS

RECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA

TARGET COMPOUND LIST (TCL)

Volatiles

2-Chloroethylvinyl ether  
Chloromethane  
Bromomethane  
Vinyl Chloride  
Chloroethane  
Methylene Chloride

Acetone  
Carbon Disulfide  
1,1-Dichloroethylene  
1,1-Dichloroethane  
1,2-Dichloroethylene (trans)

Chloroform  
1,2-Dichloroethane  
2-Butanone  
1,1,1-Trichloroethane  
Carbon Tetrachloride

Vinyl Acetate  
Bromodichloromethane  
1,1,2,2-Tetrachloroethane  
1,2-Dichloropropane  
cis-1,3-Dichloropropene

Trichloroethene  
Dibromochloromethane  
1,1,2-Trichloroethane  
Benzene  
trans-1,3-Dichloropropene

Bromoform  
2-Hexanone  
4-Methyl-2-pentanone  
Tetrachloroethylene  
Toluene  
Chlorobenzene  
Ethyl Benzene  
Styrene  
Total Xylenes

AR302058

TABLE 4-1 (Continued)

ANALYTICAL PARAMETERS

RECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA

TARGET ANALYTE LIST (TAL)

Semi-Volatiles

Phenol  
bis(2-Chloroethyl) ether  
2-Chlorophenol  
1,3-Dichlorobenzene  
1,4-Dichlorobenzene  
Benzyl alcohol  
1,2-Dichlorobenzene  
2-Methylphenol  
bis(2-Chloroisopropyl) ether  
4-Methylphenol  
N-Nitroso-di-n-propylamine  
Hexachloroethane  
Nitrobenzene  
Isophorone  
2-Nitrophenol  
2,4-Dimethylphenol  
Benzoic acid  
bis(2-Chloroethoxy) methane  
2,4-Dichlorophenol  
1,2,4-Trichlorobenzene  
Naphthalene  
4-Chloroaniline  
Hexachlorobutadiene  
4-Chloro-3-methylphenol  
2-Methylnaphthalene  
Hexachlorocyclopentadiene  
2,4,6-Trichlorophenol  
2,4,5-Trichlorophenol  
2-Chloronaphthalene  
2-Nitroaniline  
Dimethylphthalate  
Acenaphthylene  
2,6-Dinitrotoluene  
3-Nitroaniline  
Acenaphthene  
2,4-Dinitrophenol  
4-Nitrophenol  
Dibenzofuran  
2,4-Dinitrotoluene  
Diethylphthalate  
4-Chlorophenyl-phenylether

AR302059

TABLE 4-1 (Continued)

ANALYTICAL PARAMETERS

RECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA

TARGET ANALYTE LIST (TAL)

Semi-Volatiles (Continued)

Fluorene  
4-Nitroaniline  
4,6-Dinitro-2-methylphenol  
N-Nitrosodiphenylamine (1)  
4-Bromophenyl-phenylether  
Hexachlorobenzene  
Pentachlorophenol  
Phenanthrene  
Anthracene  
Di-n-butylphthalate  
Fluoranthene  
Pyrene  
Butylbenzylphthalate  
3,3'-Dichlorobenzidine  
Benzo(a)anthracene  
Chrysene  
bis(2-Ethylhexyl)phthalate  
Di-n-octylphthalate  
Benzo(b)fluoranthene  
Benzo(k)fluoranthene  
Benzo(a)pyrene  
Indeno(1,2,3-cd)pyrene  
Dibenz(a,h)anthracene  
Benzo(g,h,i)perylene

Metals

Aluminum  
Antimony  
Arsenic  
Barium  
Beryllium  
Cadmium  
Calcium  
Chromium  
Cobalt  
Copper  
Iron  
Lead  
Magnesium  
Manganese

AR302060

TABLE 4-1 (Continued)

ANALYTICAL PARAMETERS

RECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA

TARGET ANALYTE LIST (TAL)

Metals (Continued)

Mercury  
Nickel  
Potassium  
Selenium  
Silver  
Sodium  
Thallium  
Vanadium  
Zinc

Conventionals

Cyanide

Note:

- (1) Cannot be separated from Diphenylamine

AAW006EE

AR302061

TABLE 4-2

## CHEMICAL AND PHYSICAL PARAMETERS

RECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA

	SURFACE WATER		SEDIMENT	
		Method		Method
Field Parameters	temperature dissolved oxygen Eh pH specific conductance		temperature Eh pH specific conductance color	
Laboratory Parameters	total suspended solids alkalinity hardness BOD COD total dissolved solids (TDS) total organic carbon (TOC)	160.2 310.1 207/314A 405.1 410.4 160.1 415.2	total organic carbon grain size % moisture % solids	9060 (SW 846) ASTM method with hydrometer analysis

Note:

Unless otherwise stated, methods are taken from Methods for Chemical Analysis of Water and Wastewater (MCAWW) dated 1983.

AAW006EE

AR302062

TABLE 4-3

**SURFACE SOIL SAMPLES  
ANALYTICAL RESULTS**

**RECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA**

Dames & Moore Sample Number Laboratory Sample Number		FB* 12206-001	R/SS-2 12206-003	TB* 12206-004	A/SS-6 12268-001	A/SS-3 12268-002	A/SS-4 12268-003
Units	Quantitation Limit	ug/l	ug/kg	ug/l	ug/kg	ug/kg	ug/kg
VOLATILE COMPOUNDS							
Chloromethane	10	10 U	13 UJ	10 U	33 U	18 U	18 U
Bromomethane	10	10 U	13 U	10 U	33 U	18 U	18 U
Vinyl Chloride	10	10 U	13 U	10 U	33 U	18 U	18 U
Chloroethane	10	10 U	13 U	10 U	33 U	18 U	18 U
Methylene Chloride	5.0	2 J	6 U	5 U	11 JD	3 BJ	9 U
Acetone	10	3 J	140 J	10 U	33 U	18 U	25 B
Vinyl Acetate	10.0	10 U	13 U	10 U	33 U	18 U	18 U
Carbon Disulfide	5.0	5 U	6 U	5 U	16 U	9 U	9 U
1,1-Dichloroethene	5.0	5 U	6 U	5 U	16 U	9 U	9 U
1,1-Dichloroethane	5.0	5 U	6 U	5 U	16 U	9 U	9 U
1,2-Dichloroethene (total)	5.0	5 U	6 U	5 U	16 U	9 U	9 U
Chloroform	5.0	2 J	6 U	19	16 U	9 U	9 U
1,2-Dichloroethane	5.0	5 U	6 U	5 U	16 U	9 U	9 U
2-Butanone	10.0	10 U	10 U	10 U	33 U	18 U	18 U
1,1,1-Trichloroethane	5.0	5 U	6 U	5 U	16 U	9 U	9 U
Carbon Tetrachloride	5.0	5 U	6 U	5 U	16 U	9 U	9 U
Bromodichloromethane	5.0	5 U	6 U	5 U	16 U	9 U	9 U
1,2-Dichloropropane	5.0	5 U	6 U	5 U	16 U	9 U	9 U
trans-1,3-Dichloropropene	5.0	5 U	6 U	5 U	16 U	9 U	9 U
Trichloroethene	5.0	5 U	6 U	5 U	5 J	2 J	9 U
Dibromochloromethane	5.0	5 U	6 U	5 U	16 U	9 U	9 U
1,1,2-Trichloroethane	5.0	5 U	6 U	5 U	16 U	9 U	9 U
Benzene	5.0	5 U	6 U	5 U	16 U	9 U	9 U
cis-1,3-Dichloropropene	5.0	5 U	6 U	5 U	16 U	9 U	9 U
Bromoform	5.0	5 U	6 U	5 U	16 U	9 U	9 U

AR302063

TABLE 4-3

**SURFACE SOIL SAMPLES  
ANALYTICAL RESULTS**

**RECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA**

Dames & Moore Sample Number Laboratory Sample Number		FB* 12206-001	R/SS-2 12206-003	TB* 12206-004	A/SS-6 12268-001	A/SS-3 12268-002	A/SS-4 12268-003
Units	Quantitation Limit	ug/l	ug/kg	ug/l	ug/kg	ug/kg	ug/kg
VOLATILE COMPOUNDS							
4-Methyl-2-Pentanone	10.0	10 U	10 U	10 U	33 U	18 U	18 U
2-Hexanone	10.0	10 U	10 U	10 U	33 U	18 U	18 U
Tetrachloroethene	5.0	5 U	6 U	5 U	16 U	9 U	9 U
1,1,2,2-Tetrachloroethane	5.0	5 U	6 U	5 U	16 U	9 U	9 U
Toluene	5.0	5 U	6 U	5 U	16 U	9 U	9 U
Chlorobenzene	5.0	5 U	6 U	5 U	16 U	9 U	9 U
Ethylbenzene	5.0	5 U	6 U	5 U	16 U	9 U	9 U
Styrene	5.0	5 U	6 U	5 U	16 U	9 U	9 U
Xylenes (total)	5.0	5 U	6 U	5 U	16 U	9 U	9 U
Total Confident Concentration		-	41 J	-	-	-	9.4 J
Dilution Factor		1.0	1.0	1.0	2.0	1.0	1.0
Date Sample Received		2/15	2/15	2/15	2/20	2/20	2/20
Date of Analysis		2/23	2/25	2/23 **	3/1	3/1	3/1

U Compound was not detected.

J Quantitation is approximate due to limitations identified during the quality control review (data validation).

B This result is qualitatively suspect since this compound was detected in a field and/or laboratory blank(s) at a similar level.

D Analysis of diluted sample.

\* Sample is associated with surface soil and surface water samples and appears on both tables.

\*\* Analyzed 1 day out of hold; no preservative.

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AR302064

TABLE 4-3

SURFACE SOIL SAMPLES  
ANALYTICAL RESULTSRECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA

Dames & Moore Sample Number Laboratory Sample Number		A/SS-5 12268-004	R/SS-7A 12268-005	R/SS-7B 12268-006	R/SS-7C 12268-007	TB 12268-008	FB 12268-009
Units	Quantitation Limit	ug/kg	ug/kg	ug/kg	ug/kg	ug/l	ug/l
VOLATILE COMPOUNDS							
Chloromethane	10	14 U	13 U	13 U	13 U	10 U	10 U
Bromomethane	10	14 U	13 U	13 U	13 U	10 U	10 U
Vinyl Chloride	10	14 U	13 U	13 U	13 U	10 U	10 U
Chloroethane	10	14 U	13 U	13 U	13 U	10 U	10 U
Methylene Chloride	5.0	7 U	7 U 6 JB	7 U 5 JB	5 JB	5 U	1 J
Acetone	10	14 U	13 U	13 U	18 B	7 J	7 J
Vinyl Acetate	10.0	14 U	13 U	13 U	13 U	10 U	10 U
Carbon Disulfide	5.0	7 U	7 U	7 U	6 U	5 U	5 U
1,1-Dichloroethene	5.0	7 U	7 U	7 U	6 U	5 U	5 U
1,1-Dichloroethane	5.0	7 U	7 U	7 U	6 U	5 U	5 U
1,2-Dichloroethene (total)	5.0	7 U	7 U	7 U	6 U	5 U	5 U
Chloroform	5.0	7 U	7 U	7 U	6 U	5 U	2 J
1,2-Dichloroethane	5.0	7 U	7 U	7 U	6 U	5 U	5 U
2-Butanone	10.0	14 U	13 U	13 U	13 U	10 U	10 U
1,1,1-Trichloroethane	5.0	7 U	7 U	7 U	6 U	5 U	5 U
Carbon Tetrachloride	5.0	7 U	7 U	7 U	6 U	5 U	5 U
Bromodichloromethane	5.0	7 U	7 U	7 U	6 U	5 U	5 U
1,2-Dichloropropane	5.0	7 U	7 U	7 U	6 U	5 U	5 U
trans-1,3-Dichloropropene	5.0	7 U	7 U	7 U	6 U	5 U	5 U
Trichloroethene	5.0	7 U	7 U	7 U	6 U	5 U	5 U
Dibromochloromethane	5.0	7 U	7 U	7 U	6 U	5 U	5 U
1,1,2-Trichloroethane	5.0	7 U	7 U	7 U	6 U	5 U	5 U
Benzene	5.0	7 U	7 U	7 U	6 U	5 U	5 U
cis-1,3-Dichloropropene	5.0	7 U	7 U	7 U	6 U	5 U	5 U
Bromoform	5.0	7 U	7 U	7 U	6 U	5 U	5 U

AR302065

TABLE 4-3

**SURFACE SOIL SAMPLES  
ANALYTICAL RESULTS**

**RECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA**

Dames & Moore Sample Number Laboratory Sample Number		A/SS-5 12268-004	R/SS-7A 12268-005	R/SS-7B 12268-006	R/SS-7C 12268-007	TB 12268-008	FB 12268-009
Units	Quantitation Limit	ug/kg	ug/kg	ug/kg	ug/kg	ug/l	ug/l
VOLATILE COMPOUNDS							
4-Methyl-2-Pentanone	10.0	14 U	13 UJ	13 UJ	13 U	10 U	10 U
2-Hexanone	10.0	14 U	13 UJ	13 UJ	13 U	10 U	10 U
Tetrachloroethene	5.0	7 U	7 UJ	7 UJ	6 U	5 U	5 U
1,1,2,2-Tetrachloroethane	5.0	7 U	7 UJ	7 UJ	6 U	5 U	5 U
Toluene	5.0	7 U	7 UJ	7 UJ	6 U	5 U	5 U
Chlorobenzene	5.0	7 U	7 UJ	7 UJ	6 U	5 U	5 U
Ethylbenzene	5.0	7 U	7 UJ	7 UJ	6 U	5 U	5 U
Styrene	5.0	7 U	7 UJ	7 UJ	6 U	5 U	5 U
Xylenes (total)	5.0	7 U	7 UJ	7 UJ	6 U	5 U	5 U
Total Confident Concentration		ND	ND 14 BJ	ND 16 BJ	ND	ND	ND
Dilution Factor		1.0	1.0	1.0	1.0	1.0	1.0
Date Sample Received		2/20	2/20	2/20	2/20	2/20	2/20
Date of Analysis		3/1	3/2 3/1	3/2 3/1	3/1	3/1	3/1

- Not Detected.

U Compound was not detected.

J Quantitation is approximate due to limitations identified during the quality control review (data validation).

B This result is qualitatively suspect since this compound was detected in a field and/or laboratory blank(s) at a similar level.

\* Sample is associated with surface soil and surface water samples and appears on both tables.

\*\* Analyzed 1 day out of hold; no preservative.

ND No tentatively identified compounds detected.

Total Confident Concentration - Equivalent to the total concentration of "tentatively identified compounds."

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AR302066

TABLE 4-3

**SURFACE SOIL SAMPLES  
ANALYTICAL RESULTS**

**RECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA**

Dames & Moore Sample Number Laboratory Sample Number		FB <sup>1</sup> 12261-001	R/SS-2 12206-003	A/SS-6 12268-001	A/SS-3 12268-002	A/SS-4 12268-003
Units	Quantitation Limit (Aq/Soil)	ug/l	ug/kg	ug/kg	ug/kg	ug/kg
<b>SEMIVOLATILE COMPOUNDS</b>						
Phenol	10 / 330	10 U	410 U	550 U	590 U	1100 U
bis(2-Chloroethyl)ether	10 / 330	10 U	410 U	550 U	590 U	1100 U
2-Chlorophenol	10 / 330	10 U	410 U	550 U	590 U	1100 U
1,3-Dichlorobenzene	10 / 330	10 U	410 U	550 U	590 U	1100 U
1,4-Dichlorobenzene	10 / 330	10 U	410 U	550 U	590 U	1100 U
Benzyl Alcohol	10 / 330	10 U	410 U	550 U	590 U	1100 U
1,2-Dichlorobenzene	10 / 330	10 U	410 U	550 U	590 U	1100 U
2-Methyl Phenol	10 / 330	10 U	410 U	550 U	590 U	1100 U
bis(2-Chloroisopropyl)ether	10 / 330	10 U	410 U	550 U	590 U	1100 U
4-Methyl Phenol	10 / 330	10 U	410 U	550 U	590 U	1100 U
N-Nitroso-di-n-propylamine	10 / 330	10 U	410 U	550 U	590 U	1100 U
Hexachloroethane	10 / 330	10 U	410 U	550 U	590 U	1100 U
Nitrobenzene	10 / 330	10 U	410 U	550 U	590 U	1100 U
Isophorone	10 / 330	10 U	410 U	550 U	590 U	1100 U
2-Nitrophenol	10 / 330	10 U	410 U	550 U	590 U	1100 U
2,4-Dimethylphenol	10 / 330	10 U	410 U	550 U	590 U	1100 UL
Benzoic Acid	50 / 1650	50 U	2000 U	2700 U	2800 U	5600 UL
bis(2-Chloroethoxy)methane	10 / 330	10 U	410 U	550 U	590 U	1100 UL
2,4-Dichlorophenol	10 / 330	10 U	410 U	550 U	590 U	1100 UL
1,2,4-Trichlorobenzene	10 / 330	10 U	410 U	550 U	590 U	1100 UL
Naphthalene	10 / 330	10 U	410 U	110 J	590 U	1100 UL
4-Chloroaniline	10 / 330	10 U	410 U	550 U	590 U	1100 UL
Hexachlorobutadiene	10 / 330	10 U	410 U	550 U	590 U	1100 UL
4-Chloro-3-methylphenol	10 / 330	10 U	410 U	550 U	590 U	1100 UL
2-Methylnaphthalene	10 / 330	10 U	410 U	250 J	590 U	1100 UL
Hexachlorocyclopentadiene	10 / 330	10 U	410 U	550 U	590 U	1100 UL

AR302067

TABLE 4-3

**SURFACE SOIL SAMPLES  
ANALYTICAL RESULTS**

**RECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA**

Dames & Moore Sample Number Laboratory Sample Number		FB <sup>1</sup> 12261-001	R/SS-2 12206-003	A/SS-6 12268-001	A/SS-3 12268-002	A/SS-4 12268-003
Units	Quantitation Limit (Aq/Soil)	ug/l	ug/kg	ug/kg	ug/kg	ug/kg
SEMIVOLATILE COMPOUNDS						
2,4,6-Trichlorophenol	10 / 330	10 U	410 U	550 U	590 U	1100 UL
2,4,5-Trichlorophenol	50 / 1650	50 U	2000 U	2700 U	2800 U	5600 UL
2-Chloronaphthalene	10 / 330	10 U	410 U	550 U	590 U	1100 UL
2-Nitroaniline	10 / 330	50 U	2000 U	2700 U	2800 U	5600 UL
Dimethylphthalate	10 / 330	10 U	410 U	550 U	590 U	1100 UL
Acenaphthylene	10 / 330	10 U	350 J	330 J	230 J	240 DJ
3-Nitroaniline	50 / 1650	50 U	2000 U	2700 U	2800 U	5600 UL
Acenaphthene	10 / 330	10 U	410 U	550 U	590 U	1100 UL
2,4-Dinitrophenol	10 / 330	50 U	2000 U	2700 U	2800 U	5600 UL
4-Nitrophenol	10 / 330	50 U	2000 U	2700 U	2800 U	5600 UL
Dibenzofuran	10 / 330	10 U	410 U	110 J	590 U	1100 UL
2,6-Dinitrotoluene	10 / 330	10 U	410 U	550 U	590 U	1100 UL
2,4-Dinitrotoluene	10 / 330	10 U	410 U	550 U	590 U	1100 UL
Diethylphthalate	50 / 1650	10 U	410 U	550 U	590 U	1100 UL
4-Chlorophenylphenylether	10 / 330	10 U	410 U	550 U	590 U	1100 UL
Fluorene	10 / 330	10 U	410 U	550 U	590 U	1100 UL
4-Nitroaniline	10 / 330	50 U	2000 U	2700 U	2800 U	5600 UL
4,6-Dinitro-2-methylphenol	50 / 1650	10 U	410 U	550 U	590 U	1100 UL
N-Nitrosodiphenylamine	10 / 330	10 U	410 U	550 U	590 U	1100 UL
4-Bromophenylphenylether	10 / 330	10 U	410 U	550 U	590 U	1100 UL
Hexachlorobenzene	10 / 330	10 U	410 U	550 U	590 U	1100 UL
Pentachlorophenol	10 / 330	50 U	2000 U	2700 U	2800 U	5600 UL
Phenanthrene	10 / 330	10 U	330 J	610	290 J	650 DJ
Anthracene	10 / 330	10 U	210 J	270 J	150 J	220 DJ
Di-n-butylphthalate	10 / 330	10 U	99 BJ	73 J	590 U	1100 UL
Fluoranthene	10 / 330	10 U	1300	930	720	1600 D

AR302068

TABLE 4-3

**SURFACE SOIL SAMPLES  
ANALYTICAL RESULTS**

**RECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA**

Dames & Moore Sample Number Laboratory Sample Number		FB <sup>1</sup> 12261-001	R/SS-2 12206-003	A/SS-6 12268-001	A/SS-3 12268-002	A/SS-4 12268-003
Units	Quantitation Limit (Aq/Soil)	ug/l	ug/kg	ug/kg	ug/kg	ug/kg
SEMIVOLATILE COMPOUNDS						
Pyrene	10 / 330	10 U	1200	1000	680	1600 D
Butylbenzylphthalate	10 / 330	10 U	92 J	390 J	140 J	170 DJ
3,3'-Dichlorobenzidine	20 / 660	20 U	820 U	1100 U	1200 U	2300 U
Benzo(a)anthracene	10 / 330	10 U	1000	410 J	300 J	770 DJ
bis(2-Ethylhexyl)phthalate	10 / 330	10 U	560	220 J	260 J	930 DJ
Chrysene	10 / 330	10 U	1000	710	520 J	990 DJ
Di-n-octylphthalate	10 / 330	10 U	410 U	550 U	590 U	1100 UL
Benzo(b)fluoranthene	10 / 330	10 U	1400	1600	1200	2000 DL
Benzo(k)fluoranthene	10 / 330	10 U	950	550 U	590 U	1100 UL
Benzo(a)pyrene	10 / 330	10 U	1200	660	490 J	900 DJ
Indeno(1,2,3-cd)pyrene	10 / 330	10 U	410 U	380 J	260 J	1100 DJ
Dibenz(a,h)anthracene	10 / 330	10 U	410 U	550 U	63 J	1100 UL
Benzo(g,h,i)perylene	10 / 330	10 U	690	420 J	250 J	810 DJ
Dilution Factor		1.0	1.0	1.0	1.0	2.0
Date Sample Received		2/15	2/15	2/20	2/20	2/20
Date Sample Extracted		2/18	4/2 *	3/2	3/2	3/2
Date of Analysis		3/15	4/19	4/9	4/9	4/15 **

U Compound was not detected.

J Quantitation is approximate due to limitations identified during the quality control review (data validation).

B This result is qualitatively suspect since this compound was detected in a field and/or laboratory blank(s) at a similar level.

L Biased low.

UJ This analyte was not detected, but the quantitation limit is probably an estimated value.

D Analysis of diluted sample.

\* Extracted out of hold.

\*\* Analyzed out of hold.

<sup>1</sup> Sample is associated with surface soil and surface water samples and appears on both tables.

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TABLE 4-3

**SURFACE SOIL SAMPLES  
ANALYTICAL RESULTS**

**RECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA**

Dames & Moore Sample Number Laboratory Sample Number		A/SS-5 12268-004	R/SS-7A 12268-005	R/SS-7B 12268-006	R/SS-7C 12268-007	FB 12268-009
Units	Quantitation Limit (Aq/Soil)	ug/kg	ug/kg	ug/kg	ug/kg	ug/l
<b>SEMIVOLATILE COMPOUNDS</b>						
Phenol	10 / 330	950 UL	430 UL	440 UL	430 UL	10 UL
bis(2-Chloroethyl)ether	10 / 330	950 UL	430 UL	440 UL	430 UL	10 UL
2-Chlorophenol	10 / 330	950 UL	430 UL	440 UL	430 UL	10 UL
1,3-Dichlorobenzene	10 / 330	950 UL	430 UL	440 UL	430 UL	10 UL
1,4-Dichlorobenzene	10 / 330	950 UL	430 UL	440 UL	430 UL	10 UL
Benzyl Alcohol	10 / 330	950 UL	430 UL	440 UL	430 UL	10 UL
1,2-Dichlorobenzene	10 / 330	950 UL	430 UL	440 UL	430 UL	10 UL
2-Methyl Phenol	10 / 330	950 UL	430 UL	440 UL	430 UL	10 UL
bis(2-Chloroisopropyl)ether	10 / 330	950 UL	430 UL	440 UL	430 UL	10 UL
4-Methyl Phenol	10 / 330	950 UL	430 UL	440 UL	430 UL	10 UL
N-Nitroso-di-n-propylamine	10 / 330	950 UL	430 UL	440 UL	430 UL	10 UL
Hexachloroethane	10 / 330	950 UL	430 UL	440 UL	430 UL	10 UL
Nitrobenzene	10 / 330	950 UL	430 UL	440 UL	430 UL	10 UL
Isophorone	10 / 330	950 UL	430 UL	440 UL	430 UL	10 UL
2-Nitrophenol	10 / 330	950 UL	430 UL	440 UL	430 UL	10 UL
2,4-Dimethylphenol	10 / 330	950 UL	430 UL	440 UL	430 UL	10 UL
Benzoic Acid	50 / 1650	260 DJ	250 J	2100 UL	2100 UL	50 UL
bis(2-Chloroethoxy)methane	10 / 330	950 UL	430 UL	440 UL	430 UL	10 UL
2,4-Dichlorophenol	10 / 330	950 UL	430 UL	440 UL	430 UL	10 UL
1,2,4-Trichlorobenzene	10 / 330	950 UL	430 UL	440 UL	430 UL	10 UL
Naphthalene	10 / 330	400 DJ	430 UL	440 UL	430 UL	10 UL
4-Chloroaniline	10 / 330	950 UL	430 UL	440 UL	430 UL	10 UL
Hexachlorobutadiene	10 / 330	950 UL	430 UL	440 UL	430 UL	10 UL
4-Chloro-3-methylphenol	10 / 330	950 UL	430 UL	440 UL	430 UL	10 UL
2-Methylnaphthalene	10 / 330	700 DJ	430 UL	440 UL	430 UL	10 UL
Hexachlorocyclopentadiene	10 / 330	950 UL	430 UL	440 UL	430 UL	10 UJ

AR302070

TABLE 4-3

**SURFACE SOIL SAMPLES  
ANALYTICAL RESULTS**

**RECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA**

Dames & Moore Sample Number Laboratory Sample Number		A/SS-5 12268-004	R/SS-7A 12268-005	R/SS-7B 12268-006	R/SS-7C 12268-007	FB 12268-009
Units	Quantitation Limit (Aq/Soil)	ug/kg	ug/kg	ug/kg	ug/kg	ug/l
SEMIVOLATILE COMPOUNDS						
2,4,6-Trichlorophenol	10 / 330	950 UL	430 UL	440 UL	430 UL	10 UL
2,4,5-Trichlorophenol	50 / 1650	4600 UL	2100 UL	2100 UL	2100 UL	50 UL
2-Chloronaphthalene	10 / 330	950 UL	430 UL	440 UL	430 UL	10 UL
2-Nitroaniline	10 / 330	4600 UL	2100 UL	2100 UL	2100 UL	50 UL
Dimethylphthalate	10 / 330	950 UL	430 UL	440 UL	430 UL	10 UL
Acenaphthylene	10 / 330	260 DJ	140 J	440 UL	430 UL	10 UL
3-Nitroaniline	50 / 1650	4600 UL	2100 UL	2100 UL	2100 UL	50 UL
Acenaphthene	10 / 330	950 UL	430 UL	440 UL	430 UL	10 UL
2,4-Dinitrophenol	10 / 330	4600 UL	2100 UL	2100 UL	2100 UL	50 UL
4-Nitrophenol	10 / 330	4600 UL	2100 UL	2100 UL	2100 UL	50 UL
Dibenzofuran	10 / 330	300 DJ	430 UL	440 UL	430 UL	10 UL
2,6-Dinitrotoluene	10 / 330	950 UL	430 UL	440 UL	430 UL	10 UL
2,4-Dinitrotoluene	10 / 330	950 UL	430 UL	440 UL	430 UL	10 UL
Diethylphthalate	50 / 1650	950 UL	430 UL	440 UL	430 UL	10 UL
4-Chlorophenylphenylether	10 / 330	950 UL	430 UL	440 UL	430 UL	10 UL
Fluorene	10 / 330	120 DJ	430 UL	440 UL	430 UL	10 UL
4-Nitroaniline	10 / 330	4600 UL	2100 UL	2100 UL	2100 UL	50 UL
4,6-Dinitro-2-methylphenol	50 / 1650	950 UL	430 UL	440 UL	430 UL	10 UL
N-Nitrosodiphenylamine	10 / 330	950 UL	430 UL	440 UL	430 UL	10 UL
4-Bromophenylphenylether	10 / 330	950 UL	430 UL	440 UL	430 UL	10 UL
Hexachlorobenzene	10 / 330	950 UL	430 UL	440 UL	430 UL	10 UL
Pentachlorophenol	10 / 330	4600 UL	2100 UL	2100 UL	2100 UL	50 UL
Phenanthrene	10 / 330	1600 LD	94 J	440 UL	430 UL	10 UL
Anthracene	10 / 330	320 DJ	77 J	440 UL	430 UL	10 UL
Di-n-butylphthalate	10 / 330	950 UL	430 UL	440 UL	430 UL	10 UL
Fluoranthene	10 / 330	1500 LD	270 J	68 J	430 UL	10 UL

AR302071

TABLE 4-3

**SURFACE SOIL SAMPLES  
ANALYTICAL RESULTS**

**RECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA**

Dames & Moore Sample Number Laboratory Sample Number		A/SS-5 12268-004	R/SS-7A 12268-005	R/SS-7B 12268-006	R/SS-7C 12268-007	FB 12268-009
Units	Quantitation Limit (Aq/Soil)	ug/kg	ug/kg	ug/kg	ug/kg	ug/l
SEMIVOLATILE COMPOUNDS						
Pyrene	10 / 330	100 DJ	430 UL	98 J	430 UL	10 UL
Butylbenzylphthalate	10 / 330	950 UL	430 UL	440 UL	430 UL	10 UL
3,3'-Dichlorobenzidine	20 / 660	1900 UL	860 UL	880 UL	860 UL	20 U
Benzo(a)anthracene	10 / 330	900 DJ	200 J	440 UL	430 UL	10 UL
bis(2-Ethylhexyl)phthalate	10 / 330	540 DJ	72 J	46 J	430 UL	10 UL
Chrysene	10 / 330	1000 LD	250 J	60 J	430 UL	10 UL
Di-n-octylphthalate	10 / 330	950 UL	430 UL	440 UL	430 UL	10 UL
Benzo(b)fluoranthene	10 / 330	1700 DL	560 L	110 J	430 UL	10 UL
Benzo(k)fluoranthene	10 / 330	950 U	430 U	440 UL	430 UL	10 UL
Benzo(a)pyrene	10 / 330	770 DJ	250 J	440 UL	430 UL	10 UL
Indeno(1,2,3-cd)pyrene	10 / 330	480 DJ	430 UL	440 UL	430 UL	10 UL
Dibenz(a,h)anthracene	10 / 330	230 DJ	430 UL	440 UL	430 UL	10 UL
Benzo(g,h,i)perylene	10 / 330	560 DJ	430 UL	440 UL	430 UL	10 UL
Dilution Factor		2.0	1.0	1.0	1.0	1.0
Date Sample Received		2/20	2/20	2/20	2/20	2/20
Date Sample Extracted		3/2	3/2	3/2	3/2	2/25
Date of Analysis		4/13**	4/13**	4/13**	4/13**	4/7**

U Compound was not detected.

J Quantitation is approximate due to limitations identified during the quality control review (data validation).

L Biased low.

UJ This analyte was not detected, but the quantitation limit is probably an estimated value.

D Analysis of diluted sample.

\* Extracted out of hold.

\*\* Analyzed out of hold.

AAW014D2

AR302072

TABLE 4-3

**SURFACE SOIL SAMPLES  
ANALYTICAL RESULTS**

**RECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA**

Dames & Moore Sample Number Laboratory Sample Number	FB* 12206-001 1361801	R/SS-2 12206-003 1361801	A/SS-6 12268-001 1367301	A/SS-3 12268-002 1367302	A/SS-4 12668-003 1367303	A/SS-5 12668-004 1367304
Remarks						
Units	mg/l	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
<b>INORGANICS</b>						
Aluminum	33.0 U	8450	10800	11500	9870	11400
Antimony	41.0 UL	12.2 UL	13.6 UL	14.5 UL	13.5 UL	12.7 UL
Arsenic	2.0 UL	2.1 JL	6.0 L	2.5 JL	2.0 JL	4.5 L
Barium	3.0 U	93.7	178	155	115	157
Beryllium	2.0 U	0.77 J	2.8	1.0 J	0.66 U	1.8
Cadmium	4.0 U	1.2 U	1.4 J	1.4 U	1.3 U	1.2 U
Calcium	159 JB	16100	4240	1920	7410	4520
Chromium	5.0 U	75.4	80.7	19.9	32.1	47.6
Cobalt	8.0 U	12.2 J	15.3 J	11.9 J	10.8 J	15.7
Copper	10.0 U	92.1 J	183 J	43.3 J	211 J	124 J
Iron	30.6 J	31000	19600	15800	14300	24400
Lead	1.0 U	57.9 DJ	151 DJ	60.7 DJ	104 DJ	114 DJ
Magnesium	74.0 U	5360	2900 J	2140 J	5980 J	3900 J
Manganese	7.0 U	768 J	1210 J	969 J	356 J	1500 J
Mercury	0.2 U	0.15 U	0.17 U	0.18 U	0.16 U	0.15 U
Nickel	13.0 U	18.4 J	25.1 J	15.9 J	19.8 J	28.7 J
Potassium	174 U	1170 J	1120 J	999 J	1160 J	1180 J
Selenium	2.0 UL	0.60 UL	0.66 UL	0.71 UL	0.66 UL	0.62 UJ
Silver	6.0 U	1.8 U	2.0 U	2.1 U	2.0 U	1.9 U
Sodium	1540 U	460 U	509 U	543 U	507 U	476 U
Thallium	1.0 U	0.30 UL	0.33 UL	0.35 UL	0.33 UL	0.31 UL
Vanadium	5.0 U	23.7	30.2	24.9	27.8	30.1
Zinc	19.5 J	123	772	111 B	346	513
Cyanide	10.0 U	0.75 U	0.83 U	0.88 U	0.82 U	0.77 U
Total Organic Carbon (TOC)		0.59	2.5	1.2	2.1	2.7
% Moisture		20	39	43	44	31

U Element was not detected.  
 J Quantitation is approximate due to limitations identified during the quality control review (data validation).  
 B This result is qualitatively suspect since this compound was detected in a field and/or laboratory blank(s) at a similar level.  
 K Biased high.  
 L Biased low.  
 \* Sample is associated with surface water and surface soil samples and appears on both tables.

AAW014D2

AR302073

TABLE 4-3

**SURFACE SOIL SAMPLES  
ANALYTICAL RESULTS**

**RECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA**

Dames & Moore Sample Number Laboratory Sample Number	R/SS-7A 12668-005 1367305	R/SS-7B 12668-006 1367306	R/SS-7C 12668-007 1367307	FB 12668-009 1367101
Remarks				
Units	mg/kg	mg/kg	mg/kg	mg/l
<b>INORGANICS</b>				
Aluminum	9500	11600	6290	33.0 U
Antimony	9.9 UL	10.5 UL	10.7 UL	41.0 U
Arsenic	0.48 UL	2.6 L	1.4 UJL	2.0 U
Barium	93.5	139	92.5	3.0 U
Beryllium	0.68 J	0.83 J	0.52 U	2.0 U
Cadmium	0.97 U	1.0 U	1.0 U	4.0 U
Calcium	3620	1500	630 J	150 J
Chromium	14.8	14.5	9.5	5.0 U
Cobalt	9.9 J	14.1	9.8 J	8.0 U
Copper	20.8 J	16.4 J	4.3 J	10.0 U
Iron	15700	17000	11600	36.6 J
Lead	74.0 DJ	37.0 DJ	30.2 DJ	1.0 U
Magnesium	3390 J	1830 J	1070 J	74.0 U
Manganese	642 J	1310 J	857 J	7.0 U
Mercury	0.12 U	0.13 U	0.13 U	0.20 U
Nickel	11.6 J	15.1 J	10.5 J	13.0 U
Potassium	1070 J	1280 J	639 J	174 U
Selenium	0.48 UL	0.51 UJ	0.52 UL	2.0 U
Silver	1.4 U	1.5 U	1.6 U	6.0 U
Sodium	372 U	396 U	402 U	1540 U
Thallium	0.24 UL	0.26 UL	0.26 UL	1.0 U
Vanadium	27.1	25.0	16.9	5.0 U
Zinc	83.7 B	92.1 B	38.0 B	40.2
Cyanide	0.60 U	0.64 U	0.65 U	10.0 U
Total Organic Carbon (TOC)	2.1	1.7	1.9	
% Moisture	24	24	23	

U Element was not detected.  
 J Quantitation is approximate due to limitations identified during the quality control review (data validation).  
 D Diluted.  
 K Biased high.  
 L Biased low.  
 \* Sample is associated with surface water and surface soil samples and appears on both tables.

AAW014D2

AR302074

TABLE 4-4

SURFACE WATER SAMPLES  
ANALYTICAL RESULTSRECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA

Dames & Moore Sample Number Laboratory Sample Number		FB 12261-001	TB 12261-003	A/SW-1 12261-004	FB* 12206-001	A/SW-2 12206-002	TB* 12206-004
Units	Quantitation Limit	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
VOLATILE COMPOUNDS							
Chloromethane	10	10 U	10 U	10 U	10 U	10 U	10 U
Bromomethane	10	10 U	10 U	10 U	10 U	10 U	10 U
Vinyl Chloride	10	10 U	10 U	10 U	10 U	10 U	10 U
Chloroethane	10	10 U	10 U	10 U	10 U	10 U	10 U
Methylene Chloride	5.0	15	5 U	5 U	2 J	5 U	5 U
Acetone	10	5 J	6 J	14 B	3 J	8 JB	10 U
Vinyl Acetate	10.0	10 U	10 U	10 U	10 U	10 U	10 U
Carbon Disulfide	5.0	5 U	5 U	5 U	5 U	5 U	5 U
1,1-Dichloroethane	5.0	5 U	5 U	5 U	5 U	5 U	5 U
1,1-Dichloroethane	5.0	5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dichloroethane (total)	5.0	5 U	5 U	5 U	5 U	5 U	5 U
Chloroform	5.0	5 U	5 U	5 U	2 J	5 U	19
1,2-Dichloroethane	5.0	5 U	5 U	5 U	5 U	5 U	5 U
2-Butanone	10.0	10 U	10 U	10 U	10 U	10 U	10 U
1,1,1-Trichloroethane	5.0	5 U	5 U	5 U	5 U	5 U	5 U
Carbon Tetrachloride	5.0	5 U	5 U	5 U	5 U	5 U	5 U
Bromodichloromethane	5.0	5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dichloropropane	5.0	5 U	5 U	5 U	5 U	5 U	5 U
trans-1,3-Dichloropropene	5.0	5 U	5 U	5 U	5 U	5 U	5 U
Trichloroethene	5.0	5 U	5 U	5 U	5 U	5 U	5 U
Dibromochloromethane	5.0	5 U	5 U	5 U	5 U	5 U	5 U
1,1,2-Trichloroethane	5.0	5 U	5 U	5 U	5 U	5 U	5 U
Benzene	5.0	5 U	5 U	5 U	5 U	5 U	5 U
cis-1,3-Dichloropropene	5.0	5 U	5 U	5 U	5 U	5 U	5 U
Bromoform	5.0	5 U	5 U	5 U	5 U	5 U	5 U
4-Methyl-2-Pentanone	10.0	10 U	10 U	10 U	10 U	10 U	10 U
2-Hexanone	10.0	10 U	10 U	10 U	10 U	10 U	10 U
Tetrachloroethene	5.0	5 U	5 U	5 U	5 U	5 U	5 U

AR302075

TABLE 4-4

**SURFACE WATER SAMPLES  
ANALYTICAL RESULTS**

**RECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA**

Dames & Moore Sample Number Laboratory Sample Number		FB 12261-001	TB 12261-003	A/SW-1 12261-004	FB* 12206-001	A/SW-2 12206-002	TB* 12206-004
Units	Quantitation Limit	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
VOLATILE COMPOUNDS							
1,1,2,2-Tetrachloroethane	5.0	5 U	5 U	5 U	5 U	5 U	5 U
Toluene	5.0	5 U	5 U	5 U	5 U	5 U	5 U
Chlorobenzene	5.0	5 U	5 U	5 U	5 U	5 U	5 U
Ethylbenzene	5.0	5 U	5 U	5 U	5 U	5 U	5 U
Styrene	5.0	5 U	5 U	5 U	5 U	5 U	5 U
Xylenes (total)	5.0	5 U	5 U	5 U	5 U	5 U	5 U
Total Confident Concentration		N/A	N/A	N/A	-	-	-
Dilution Factor		1.0	1.0	1.0	1.0	1.0	1.0
Date Sample Received		2/20	2/20	2/20	2/15	2/15	2/15**
Date of Analysis		3/1	3/1	3/1	2/23	2/23	2/23

U Compound was not detected.

J Quantitation is approximate due to limitations identified during the quality control review (data validation).

\* Sample applies to both soil boring samples and surface water samples and appears on both tables.

\*\* Analyzed 1 day out of hold - no preservative.

AAW014BF

AR302076

TABLE 4-4

**SURFACE WATER SAMPLES  
ANALYTICAL RESULTS**

**RECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA**

Dames & Moore Sample Number Laboratory Sample Number		FB 12261-001	A/SW-1 12261-004	FB 12206-001	A/SW-2 12206-002
Units	Quantitation Limit (Aq/Soil)	ug/l	ug/l	ug/l	ug/l
SEMIVOLATILE COMPOUNDS					
Phenol	10 / 330	10 U	10 U	10 U	10 U
bis(2-Chloroethyl)ether	10 / 330	10 U	10 U	10 U	10 U
2-Chlorophenol	10 / 330	10 U	10 U	10 U	10 U
1,3-Dichlorobenzene	10 / 330	10 U	10 U	10 U	10 U
1,4-Dichlorobenzene	10 / 330	10 U	10 U	10 U	10 U
Benzyl Alcohol	10 / 330	10 U	10 U	10 U	10 U
1,2-Dichlorobenzene	10 / 330	10 U	10 U	10 U	10 U
2-Methyl Phenol	10 / 330	10 U	10 U	10 U	10 U
bis(2-Chloroisopropyl)ether	10 / 330	10 U	10 U	10 U	10 U
4-Methyl Phenol	10 / 330	10 U	10 U	10 U	10 U
N-Nitroso-di-n-propylamine	10 / 330	10 U	10 U	10 U	10 U
Hexachloroethane	10 / 330	10 U	10 U	10 U	10 U
Nitrobenzene	10 / 330	10 U	10 U	10 U	10 U
Isophorone	10 / 330	10 U	10 U	10 U	10 U
2-Nitrophenol	10 / 330	10 U	10 U	10 U	10 U
2,4-Dimethylphenol	10 / 330	10 U	10 U	10 U	10 U
Benzoic Acid	50 / 1650	50 U	50 U	50 U	50 U
bis(2-Chloroethoxy)methane	10 / 330	10 U	10 U	10 U	10 U
2,4-Dichlorophenol	10 / 330	10 U	10 U	10 U	10 U
1,2,4-Trichlorobenzene	10 / 330	10 U	10 U	10 U	10 U
Naphthalene	10 / 330	10 U	10 U	10 U	10 U
4-Chloroaniline	10 / 330	10 U	10 U	10 U	10 U
Hexachlorobutadiene	10 / 330	10 U	10 U	10 U	10 U
4-Chloro-3-methylphenol	10 / 330	10 U	10 U	10 U	10 U
2-Methylnaphthalene	10 / 330	10 U	10 U	10 U	10 U
Hexachlorocyclopentadiene	10 / 330	10 UJ	10 UJ	10 U	10 U
2,4,6-Trichlorophenol	10 / 330	10 U	10 U	10 U	10 U
2,4,5-Trichlorophenol	50 / 1650	50 U	50 U	50 U	50 U

AR302077

TABLE 4-4

**SURFACE WATER SAMPLES  
ANALYTICAL RESULTS**

**RECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA**

Dames & Moore Sample Number Laboratory Sample Number		FB 12261-001	A/SW-1 12261-004	FB 12206-001	A/SW-2 12206-002
Units	Quantitation Limit (Aq/Soil)	ug/l	ug/l	ug/l	ug/l
<b>SEMIVOLATILE COMPOUNDS</b>					
2-Chloronaphthalene	10 / 330	10 U	10 U	10 U	10 U
2-Nitroaniline	50 / 1650	50 U	50 U	50 U	50 U
Dimethylphthalate	10 / 330	10 U	10 U	10 U	10 U
Acenaphthylene	10 / 330	10 U	10 U	10 U	10 U
3-Nitroaniline	50 / 1650	50 U	50 U	50 U	50 U
Acenaphthene	10 / 330	10 U	10 U	10 U	10 U
2,4-Dinitrophenol	50 / 1650	50 U	50 U	50 U	50 U
4-Nitrophenol	50 / 1650	50 U	50 U	50 U	50 U
Dibenzofuran	10 / 330	10 U	10 U	10 U	10 U
2,6-Dinitrotoluene	10 / 330	10 U	10 U	10 U	10 U
2,4-Dinitrotoluene	10 / 330	10 U	10 U	10 U	10 U
Diethylphthalate	10 / 330	10 U	1 J	10 U	10 U
4-Chlorophenylphenylether	10 / 330	10 U	10 U	10 U	10 U
Fluorene	10 / 330	10 U	10 U	10 U	10 U
4-Nitroaniline	50 / 1650	50 U	50 U	50 U	50 U
4,6-Dinitro-2-methylphenol	10 / 330	10 U	10 U	10 U	10 U
N-Nitrosodiphenylamine	10 / 330	10 U	10 U	10 U	10 U
4-Bromophenylphenylether	10 / 330	10 U	10 U	10 U	10 U
Hexachlorobenzene	10 / 330	10 U	10 U	10 U	10 U
Pentachlorophenol	10 / 330	50 U	50 U	50 U	50 U
Phenanthrene	50 / 1650	10 U	10 U	10 U	10 U
Anthracene	10 / 330	10 U	10 U	10 U	10 U
Di-n-butylphthalate	10 / 330	10 U	10 U	10 U	10 U
Fluoranthene	10 / 330	10 U	10 U	10 U	10 U
Pyrene	10 / 330	10 U	10 U	10 U	10 U
Butylbenzylphthalate	10 / 330	10 U	10 U	10 U	10 U
3,3'-Dichlorobenzidine	20 / 660	20 U	20 U	20 U	20 U
Benzo(a)anthracene	10 / 330	10 U	10 U	10 U	10 U

AR302078

**SURFACE WATER SAMPLES  
ANALYTICAL RESULTS**

**RECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA**

Dames & Moore Sample Number Laboratory Sample Number		FB 12261-001	A/SW-1 12261-004	FB 12206-001	A/SW-2 12206-002
Units	Quantitation Limit (Aq/Soil)	ug/l	ug/l	ug/l	ug/l
<b>SEMIVOLATILE COMPOUNDS</b>					
bis(2-Ethylhexyl)phthalate	10 / 330	10 U	1 J	10 U	10 U
Chrysene	10 / 330	10 U	10 U	10 U	10 U
Di-n-octylphthalate	10 / 330	10 U	10 U	10 U	10 U
Benzo(b)fluoranthene	10 / 330	10 U	10 U	10 U	10 U
Benzo(k)fluoranthene	10 / 330	10 U	10 U	10 U	10 U
Benzo(a)pyrene	10 / 330	10 U	10 U	10 U	10 U
Indeno(1,2,3-cd)pyrene	10 / 330	10 U	10 U	10 U	10 U
Dibenz(a,h)anthracene	10 / 330	10 U	10 U	10 U	10 U
Benzo(g,h,i)perylene	10 / 330	10 U	10 U	10 U	10 U
Dilution Factor		1.0	1.0	1.0	1.0
Date Sample Received		2/20	2/20	2/15	2/15
Date Sample Extracted		2/25	2/25	2/18	2/18
Date of Analysis		3/17	3/17	3/15	3/15

U Compound was not detected.

J Quantitation is approximate due to limitations identified during the quality control review (data validation).

UJ This analyte was not detected, but the quantitation limit is an estimated value.

AAW014BF

AR302079

TABLE 4-4

**SURFACE WATER SAMPLES  
ANALYTICAL RESULTS**

**RECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA**

Dames & Moore Sample Number Enesco Laboratory Sample Number Rocky Mtn. Analytical Sample Number	FB 12261-002 1366801	FB 12261-001 1366901	A/SW-1 12261-005 1366802	A/SW-1 12261-004 1366902	FB* 12206-001 1361601	A/SW-2 12206-002 1361402	FB 12206-001 1361401	A/SW-2 12206-002 1361602	A/SW-1 13171-001	A/SW-2 13171-002
Remarks	Disolved	Total	Disolved	Total	Total	Disolved	Disolved	Total		
Units	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
<b>INORGANICS</b>										
Aluminum	33.0 U	33.0 U	33.0 U	2250 J	33.0 U	64.7 J	33.0 U	1550		
Antimony	41.0 U	41.0 U	41.0 U	41.0 U	41.0 U	41.0 U	41.0 U	41.0 U		
Arsenic	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U		
Barium	3.0 U	3.0 U	30.7 J	55.6 J	3.0 U	31.2 J	3.9 J	51.7 J		
Beryllium	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U		
Cadmium	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.9 J		
Calcium	111 U	111 U	22600	24700	159 JB	20600	327 J	22600 L		
Chromium	5.0 U	5.0 U	5.0 U	10.6	5.0 U	5.0 U	5.0 U	6.6 J		
Cobalt	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U		
Copper	10.0 U	10.0 U	192	90.2	10.0 U	30.4	10.0 U	87.6		
Iron	24.0 U	24.0 UL	79.2 J	2820 JL	30.6 JB	107	24.0 U	2190 L		
Lead	1.0 U	1.0 UL	1.0 U	20.6 L	1.0 U	1.0 UL	1.0 UL	7.4 L		
Magnesium	74.0 U	74.0 U	6850	6030	74.0 U	6000	74.0 U	6310		
Manganese	7.0 U	7.0 U	156	245	7.0 U	115	7.0 U	200		
Mercury	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U		
Nickel	13.0 U	13.0 U	13.0 U	13.0 U	13.0 U	13.0 U	13.0 U	13.0 U		
Potassium	174 U	174 U	9500	6800	174 U	5830	246 J	6030		
Selenium	2.0 UL	2.0 UL	2.0 UL	2.0 UL	2.0 U	2.0 UL	2.0 U	2.6 J		
Silver	6.0 U	6.0 U	6.0 U	6.0 U	6.0 U	6.0 U	6.0 U	6.0 U		
Sodium	1540 U	1540 U	48900	41000	1540 U	39600 L	1540 UL	38600		
Thallium	1.0 UL	1.0 UL	10.0 ULD	1.0 UL	1.0 U	1.0 UL	1.0 U	1.0 UL		

AR302080

TABLE 4-4

SURFACE WATER SAMPLES  
ANALYTICAL RESULTSRECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA

Dames & Moore Sample Number Enesco Laboratory Sample Number Rocky Mtn. Analytical Sample Number	FB 12261-002 1366801	FB 12261-001 1366901	A/SW-1 12261-005 1366802	A/SW-1 12261-004 1366902	FB* 12206-001 1361601	A/SW-2 12206-002 1361402	FB 12206-001 1361401	A/SW-2 12206-002 1361602	A/SW-1 13171-001	A/SW-2 13171-002
Remarks	Dissolved	Total	Dissolved	Total	Total	Dissolved	Dissolved	Total		
Units	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
INORGANICS										
Vanadium	5.0 U	5.0 U	5.3 J	9.9 J	5.0 U	5.0 U	5.0 U	6.1 J		
Zinc	4.0 U	4.0 U	24.7	72.3	19.5 JB	41.6	4.0 U	116		
Cyanide	NR	10.0 U	NR	10.0 U	10.0 U	NR	NR	10.0 U		
Hardness									70	51.4
BOD									17.6	6.0
Alkalinity, total									90.3	52.5
ALK. Bicarbonate									90.3	52.5
ALK. Carbonate									ND	ND
ALK. Hydroxide									ND	ND
Chemical Oxygen Demand (COD)									58	30
Total Organic Carbon (TOC)									12.4	9.3
Total Dissolved Solids (TDS)									170	110
Total Suspended Solids (TSS)									29.0	11.0

Element was not detected.

J Quantitation is approximate due to limitations identified during the quality control review (data validation).

NR Not run.

\* Sample applies to both soil boring and surface water samples and appears on both tables.

L Biased low.

UL Element nondetected, but value is low.

D Dilution.

B This result is qualitatively suspect since this compound was detected in a field and/or laboratory blank(s) at a similar level.

ND Tentatively identified compounds not detected.

AAW014BF

AR302081

TABLE 4-5

**SOIL BORING SAMPLES  
ANALYTICAL RESULTS**

**RECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA**

Dames & Moore Sample Number		R/L9 16-18'	A/C5 18-20'	A/C5 16-18'	A/C5 14-16'	A/C5 4-6'	A/K9A 8-10'
Laboratory Sample Number		12408-001	12139-001	12139-002	12139-003	12139-004	12139-005
Units	Quantitation Limit	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
VOLATILE COMPOUNDS							
Chloromethane	10	13 U	11 U	11 U	14 U	13 U	12 U
Bromomethane	10	13 U	11 U	11 U	14 U	13 U	12 U
Vinyl Chloride	10	13 U	11 U	11 U	14 U	13 U	12 U
Chloroethane	10	13 U	11 U	11 U	14 U	13 U	12 U
Methylene Chloride	5.0	6 U	5 U	5 U	7 U	6 U	6 U
Acetone	10	13 U	11 U	11 U	14 U	13 U	12 U
Vinyl Acetate	10.0	13 U	11 U	11 U	14 U	13 U	12 U
Carbon Disulfide	5.0	6 U	5 U	5 U	7 U	6 U	6 U
1,1-Dichloroethene	5.0	6 U	5 U	5 U	7 U	6 U	6 U
1,1-Dichloroethane	5.0	6 U	5 U	5 U	7 U	6 U	6 U
1,2-Dichloroethene (total)	5.0	6 U	5 U	5 U	7 U	6 U	6 U
Chloroform	5.0	6 U	5 U	5 U	7 U	6 U	6 U
1,2-Dichloroethane	5.0	6 U	5 U	5 U	7 U	6 U	6 U
2-Butanone	10.0	13 U	11 U	11 U	14 U	13 U	12 U
1,1,1-Trichloroethane	5.0	6 U	5 U	5 U	7 U	6 U	6 U
Carbon tetrachloride	5.0	6 U	5 U	5 U	7 U	6 U	6 U
Bromodichloromethane	5.0	6 U	5 U	5 U	7 U	6 U	6 U
1,2-Dichloropropane	5.0	6 U	5 U	5 U	7 U	6 U	6 U
trans-1,3-Dichloropropene	5.0	6 U	5 U	5 U	7 U	6 U	6 U
Trichloroethene	5.0	7	5 U	5 U	7 U	6 U	6 U
Dibromochloromethane	5.0	6 U	5 U	5 U	7 U	6 U	6 U
1,1,2-Trichloroethane	5.0	6 U	5 U	5 U	7 U	6 U	6 U
Benzene	5.0	6 U	5 U	5 U	7 U	6 U	6 U
cis-1,3-Dichloropropene	5.0	6 U	5 U	5 U	7 U	6 U	6 U
Bromoform	5.0	6 U	5 U	5 U	7 U	6 U	6 U
4-Methyl-2-Pentanone	10.0	13 U	11 U	11 U	14 U	13 U	12 U
2-Hexanone	10.0	13 U	11 U	11 U	14 U	13 U	12 U
Tetrachloroethene	5.0	6 U	5 U	5 U	7 U	6 U	6 U

TABLE 4-5

SOIL BORING SAMPLES  
ANALYTICAL RESULTSRECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA

Dames & Moore Sample Number		R/L9 16-18'	A/C5 18-20'	A/C5 16-18'	A/C5 14-18'	A/C5 4-6'	A/K9A 8-10'
Laboratory Sample Number		12408-001	12139-001	12139-002	12139-003	12139-004	12139-005
Units	Quantitation Limit	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
VOLATILE COMPOUNDS							
1,1,2,2-Tetrachloroethane	5.0	6 U	5 U	5 U	7 U	6 U	6 U
Toluene	5.0	6 U	5 U	5 U	7 U	6 U	6 U
Chlorobenzene	5.0	6 U	5 U	5 U	7 U	6 U	6 U
Ethylbenzene	5.0	6 U	5 U	5 U	7 U	6 U	6 U
Styrene	5.0	6 U	5 U	5 U	7 U	6 U	6 U
Xylenes (total)	5.0	6 U	5 U	5 U	7 U	6 U	6 U
Total Confident Concentration		N/A	N/A	N/A	N/A	N/A	N/A
Dilution Factor		1.0	1.0	1.0	1.0	1.0	1.0
Date Sample Received		2/11	2/13	2/13	2/13	2/13	2/13
Date of Analysis		2/14	2/15	2/15	2/15	2/15	2/15

U Compound was not detected.

J Quantitation is approximate due to limitations identified during the quality control review (data validation).

B This result is qualitatively suspect since this compound was detected in a field and/or laboratory blank(s) at a similar level.

R Unreliable result - Analyte may or may not be present in this sample.

AAW014D1

AR302083

TABLE 4-5

SOIL BORING SAMPLES  
ANALYTICAL RESULTSRECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA

Dames & Moore Sample Number		A/H2 10-12'	TB	A/C11 16-18'	R/A7A 6-8'	R/G2 8-10'	R/H3 8-10'
Laboratory Sample Number		12139-006	12139-007	12262-001	12262-002	12262-003	12262-004
Units	Quantitation Limit	ug/kg	ug/l	ug/kg	ug/kg	ug/kg	ug/kg
VOLATILE COMPOUNDS							
Chloromethane	10	20 U	10 U	12 U	12 U	11 U	12 U
Bromomethane	10	20 U	10 U	12 U	12 U	11 U	12 U
Vinyl Chloride	10	20 U	10 U	12 U	12 U	11 U	12 U
Chloroethane	10	20 U	10 U	12 U	12 U	11 U	12 U
Methylene Chloride	5.0	10 U	5 U	6 U	3 JB	3 JB	6 U
Acetone	10	20 U	4 JB	12 U	9 JB	114	10 JB
Vinyl Acetate	10.0	20 U	10 U	12 U	12 U	11 U	12 U
Carbon Disulfide	5.0	10 U	5 U	6 U	6 U	6 U	6 U
1,1-Dichloroethene	5.0	10 U	5 U	6 U	6 U	6 U	6 U
1,1-Dichloroethane	5.0	10 U	5 U	6 U	6 U	6 U	6 U
1,2-Dichloroethene (total)	5.0	10 U	5 U	6 U	6 U	6 U	6 U
Chloroform	5.0	10 U	5 U	6 U	6 U	6 U	6 U
1,2-Dichloroethane	5.0	10 U	5 U	6 U	6 U	6 U	6 U
2-Butanone	10.0	20 U	10 U	12 U	12 U	11 U	12 U
1,1,1-Trichloroethane	5.0	10 U	5 U	6 U	6 U	6 U	6 U
Carbon Tetrachloride	5.0	10 U	5 U	6 U	6 U	6 U	6 U
Bromodichloromethane	5.0	10 U	5 U	6 U	6 U	6 U	6 U
1,2-Dichloropropane	5.0	10 U	5 U	6 U	6 U	6 U	6 U
trans-1,3-Dichloropropene	5.0	10 U	5 U	6 U	6 U	6 U	6 U
Trichloroethene	5.0	10 U	5 U	6 U	6 U	6 U	14
Dibromochloromethane	5.0	10 U	5 U	6 U	6 U	6 U	6 U
1,1,2-Trichloroethane	5.0	10 U	5 U	6 U	6 U	6 U	6 U
Benzene	5.0	10 U	5 U	6 U	6 U	6 U	6 U
cis-1,3-Dichloropropene	5.0	10 U	5 U	6 U	6 U	6 U	6 U
Bromoform	5.0	10 U	5 U	6 U	6 U	6 U	6 U
4-Methyl-2-Pentanone	10.0	20 U	10 U	12 U	12 U	11 U	12 U
2-Hexanone	10.0	20 U	10 U	12 U	12 U	11 U	12 U
Tetrachloroethane	5.0	10 U	5 U	6 U	6 U	6 U	6 U

AR302084

TABLE 4-5

SOIL BORING SAMPLES  
ANALYTICAL RESULTSRECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA

Dames & Moore Sample Number		A/H2 10-12'	TB	A/C11 16-18'	R/A7A 6-8'	R/G2 8-10'	R/H3 8-10'
Laboratory Sample Number		12139-006	12139-007	12262-001	12262-002	12262-003	12262-004
Units	Quantitation Limit	ug/kg	ug/l	ug/kg	ug/kg	ug/kg	ug/kg
VOLATILE COMPOUNDS							
1,1,2,2-Tetrachloroethane	5.0	10 U	5 U	6 U	6 U	6 U	6 U
Toluene	5.0	10 U	5 U	6 U	6 U	6 U	6 U
Chlorobenzene	5.0	10 U	5 U	6 U	6 U	6 U	6 U
Ethylbenzene	5.0	10 U	5 U	6 U	6 U	6 U	6 U
Styrene	5.0	10 U	5 U	6 U	6 U	6 U	6 U
Xylenes (total)	5.0	10 U	5 U	6 U	6 U	6 U	6 U
Total Confident Concentration		NA	NA	-	28.1 J	13.4 J	7.4 J
Dilution Factor		1.0	1.0	1.0	1.0	1.0	1.0
Date Sample Received		2/13	2/13	2/20	2/20	2/20	2/20
Date of Analysis		2/22	2/22	3/1	2/28	2/28	2/28

U Compound was not detected.

J Quantitation is approximate due to limitations identified during the quality control review (data validation).

B This result is qualitatively suspect since this compound was detected in a field and/or laboratory blank(s) at a similar level.

\* Sample applies to both soil boring samples and surface water samples and appears on both tables.

AAW014D1

AR302085

TABLE 4-5

SOIL BORING SAMPLES  
ANALYTICAL RESULTSRECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA

Dames & Moore Sample Number		FB	TB	R/A7 9.5-11'	R/A7 18.5-20'	FB
Laboratory Sample Number		12262-007	12262-008	12205-001	12205-002	12205-003
Units	Quantitation Limit	ug/l	ug/l	ug/kg	ug/kg	ug/l
VOLATILE COMPOUNDS						
Chloromethane	10	10 U	10 U	11 U	11 U	11 U
Bromomethane	10	10 U	10 U	11 U	11 U	11 U
Vinyl Chloride	10	10 U	10 U	11 U	11 U	11 U
Chloroethane	10	10 U	10 U	11 U	11 U	11 U
Methylene Chloride	5.0	1 JB	5 U	5 U	5 U	5 U
Acetone	10	5 JB	7 JB	11 U	12 B	5 J
Vinyl Acetate	10.0	10 U	10 U	11 U	11 U	11 U
Carbon Disulfide	5.0	5 U	5 U	5 U	5 U	5 U
1,1-Dichloroethene	5.0	5 U	5 U	5 U	5 U	5 U
1,1-Dichloroethane	5.0	5 U	5 U	5 U	5 U	5 U
1,2-Dichloroethene (total)	5.0	5 U	5 U	48 DJ 47	5 U	5 U
Chloroform	5.0	5 U	5 U	5 U	5 U	5 U
1,2-Dichloroethane	5.0	5 U	5 U	5 U	5 U	5 U
2-Butanone	10.0	10 U	10 U	11 U	11 U	10 U
1,1,1-Trichloroethane	5.0	5 U	5 U	5 U	5 U	5 U
Carbon Tetrachloride	5.0	5 U	5 U	5 U	5 U	5 U
Bromodichloromethane	5.0	5 U	5 U	5 U	5 U	5 U
1,2-Dichloropropane	5.0	5 U	5 U	5 U	5 U	5 U
trans-1,3-Dichloropropene	5.0	5 U	5 U	5 U	5 U	5 U
Trichloroethene	5.0	5 U	5 U	1400 D 910 E	5 U	5 U
Dibromochloromethane	5.0	5 U	5 U	5 U	5 U	5 U
1,1,2-Trichloroethane	5.0	5 U	5 U	5 U	5 U	5 U
Benzene	5.0	5 U	5 U	5 U	5 U	5 U
cis-1,3-Dichloropropene	5.0	5 U	5 U	5 U	5 U	5 U
Bromoform	5.0	5 U	5 U	5 U	5 U	5 U
4-Methyl-2-Pentanone	10.0	10 U	10 U	11 U	11 U	10 U
2-Hexanone	10.0	10 U	10 U	11 U	11 U	10 U

AR302086

TABLE 4-5

SOIL BORING SAMPLES  
ANALYTICAL RESULTSRECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA

Dames & Moore Sample Number		FB	TB	R/A7 9.5-11'	R/A7 18.5-20'	FB
Laboratory Sample Number		12262-007	12262-008	12205-001	12205-002	12205-003
Units	Quantitation Limit	ug/l	ug/l	ug/kg	ug/kg	ug/l
VOLATILE COMPOUNDS						
Tetrachloroethene	5.0	5 U	5 U	5 U	5 U	5 U
1,1,2,2-Tetrachloroethane	5.0	5 U	5 U	5 U	5 U	5 U
Toluene	5.0	5 U	5 U	5 U	5 U	5 U
Chlorobenzene	5.0	5 U	5 U	5 U	5 U	5 U
Ethylbenzene	5.0	5 U	5 U	5 U	5 U	5 U
Styrene	5.0	5 U	5 U	5 U	5 U	5 U
Xylenes (total)	5.0	5 U	5 U	5 U	5 U	5 U
Total Confident Concentration		-	-	-	7.4 JB	-
				8.7 JB		
Dilution Factor	1.0	1.0	1.0	10	1.0	1.0
				1.0		
Date Sample Received		2/20	2/20	12/15	12/15	12/15
Date of Analysis		3/1	3/1	2/23	2/23	2/22

U Compound was not detected.

J Quantitation is approximate due to limitations identified during the quality control review (data validation).

B This result is qualitatively suspect since this compound was detected in a field and/or laboratory blank(s) at a similar level.

\* Sample applies to both soil boring samples and surface water samples and appears on both tables.

E Exceeds linear calibration range.

D Analyzed at a dilution.

AAW014D1

AR302087

TABLE 4-5

**SOIL BORING SAMPLES  
ANALYTICAL RESULTS**

**RECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA**

Dames & Moore Sample Number		Quantitation Limit (Aq/Soil)											
Laboratory Sample Number	Units		R/L9 16-18' 12048-001	A/C5 18-20' 12139-001	A/C5 14-16' 12139-003	A/C5 4-6' 12139-004	A/K9A 8-10' 12139-005	A/H2 10-12' 12139-006	A/C11 16-18' 12262-001	R/A7A 6-8' 12262-002	R/G2 8-10' 12262-003	R/H3 8-10-12' 12262-005	FB
SEMIVOLATILE COMPOUNDS													
Phenol		10 / 330	420 UL	360 UL	450 UL	410 UL	390 UL	330 UL	410 UL	390 U	370 U	390 U	10 U
bis(2-Chloroethyl)ether		10 / 330	420 UL	360 UL	450 UL	410 UL	390 UL	330 UL	410 UL	390 U	370 U	390 U	10 U
2-Chlorophenol		10 / 330	420 UL	360 UL	450 UL	410 UL	390 UL	330 UL	410 UL	390 U	370 U	390 U	10 U
1,3-Dichlorobenzene		10 / 330	420 UL	360 UL	450 UL	410 UL	390 UL	330 UL	410 UL	390 U	370 U	390 U	10 U
1,4-Dichlorobenzene		10 / 330	420 UL	360 UL	450 UL	410 UL	390 UL	330 UL	410 UL	390 U	370 U	390 U	10 U
Benzyl Alcohol		10 / 330	420 UL	360 UL	450 UL	410 UL	390 UL	330 UL	410 UL	390 U	370 U	390 U	10 U
1,2-Dichlorobenzene		10 / 330	420 UL	360 UL	450 UL	410 UL	390 UL	330 UL	410 UL	390 U	370 U	390 U	10 U
2-Methyl Phenol		10 / 330	420 UL	360 UL	450 UL	410 UL	390 UL	330 UL	410 UL	390 U	370 U	390 U	10 U
bis(2-Chloroisopropyl)ether		10 / 330	420 UL	360 UL	450 UL	410 UL	390 UL	330 UL	410 UL	390 U	370 U	390 U	10 U
4-Methyl Phenol		10 / 330	420 UL	360 UL	450 UL	410 UL	390 UL	330 UL	410 UL	390 U	370 U	390 U	10 U
N-Nitroso-di-n-propylamine		10 / 330	420 UL	360 UL	450 UL	410 UL	390 UL	330 UL	410 UL	390 U	370 U	390 U	10 U
Hexachloroethane		10 / 330	420 UL	360 UL	450 UL	410 UL	390 UL	330 UL	410 UL	390 U	370 U	390 U	10 U
Nitrobenzene		10 / 330	420 UL	360 UL	450 UL	410 UL	390 UL	330 UL	410 UL	390 U	370 U	390 U	10 U
Isophorane		10 / 330	420 UL	360 UL	450 UL	410 UL	390 UL	330 UL	410 UL	390 U	370 U	390 U	10 U
2-Nitrophenol		10 / 330	420 UL	360 UL	450 UL	410 UL	390 UL	330 UL	410 UL	390 U	370 U	390 U	10 U
2,4-Dimethylphenol		10 / 330	420 UL	360 UL	450 UL	410 UL	390 UL	330 UL	410 UL	390 U	370 U	390 U	10 U
Benzoic Acid		50 / 1650	99 JL	50 JL	120 JL	54 JL	49 JL	1600 U/L	2000 UL	1900 U	1800 U	1900 U	50 U
bis(2-Chloroethoxy)methane		10 / 330	420 UL	360 UL	450 UL	410 UL	390 UL	330 UL	410 UL	390 U	370 U	390 U	10 U
2,4-Dichlorophenol		10 / 330	420 UL	360 UL	450 UL	410 UL	390 UL	330 UL	410 UL	390 U	370 U	390 U	10 U

AR302088

TABLE 4-5

**SOIL BORING SAMPLES  
ANALYTICAL RESULTS**

**RECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA**

Dames & Moore Sample Number		Quantitation Limit (Ag/Soil)											FB
Laboratory Sample Number	Units		R/L9 16-18' 12048-001	A/C5 18-20' 12139-001	A/C5 14-16' 12139-003	A/C5 4-6' 12139-004	A/K9A 8-10' 12139-005	A/H2 10-12' 12139-006	A/C11 16-18' 12262-001	R/A7A 6-8' 12262-002	R/G2 8-10' 12262-003	R/H3 8-10-12' 12262-005	
SEMIVOLATILE COMPOUNDS													
1,2,4-Trichlorobenzene		10 / 330	420 UL	360 UL	450 UL	410 UL	390 UL	330 UL	410 UL	390 U	370 U	390 U	10 U
Naphthalene		10 / 330	420 UL	360 UL	450 UL	410 UL	390 UL	330 UL	410 UL	390 U	370 U	390 U	10 U
4-Chloroaniline		10 / 330	420 UL	360 UL	450 UL	410 UL	390 UL	330 UL	410 UL	390 U	370 U	390 U	10 U
Hexachlorobutadiene		10 / 330	420 UL	360 UL	450 UL	410 UL	390 UL	330 UL	410 UL	390 U	370 U	390 U	10 U
4-Chloro-3-methylphenol		10 / 330	420 UL	360 UL	450 UL	410 UL	390 UL	330 UL	410 UL	390 U	370 U	390 U	10 U
2-Methylnaphthalene		10 / 330	420 UL	360 UL	450 UL	410 UL	390 UL	330 UL	410 UL	390 U	370 U	390 U	10 U
Hexachlorocyclopentadiene		10 / 330	420 UL	360 UL	450 UL	410 UL	390 UL	330 UL	410 UL	390 U	370 U	390 U	10 U
2,4,6-Trichlorophenol		10 / 330	420 UL	360 UL	450 UL	410 UL	390 UL	330 UL	410 UL	390 U	370 U	390 U	10 U
2,4,5-Trichlorophenol		50 / 1650	2000 UL	1700 UL	2200 UL	2000 UL	1900 UL	1600 UL	2000 UL	1900 U	1800 U	1900 U	50 U
2-Chloronaphthalene		10 / 330	420 UL	360 UL	450 UL	410 UL	390 UL	330 UL	410 UL	390 U	370 U	390 U	10 U
2-Nitroaniline		10 / 330	2000 UL	1700 UL	2200 UL	2000 UL	1900 UL	1600 UL	2000 UL	1900 U	1800 U	1900 U	50 U
Dimethylphthalate		10 / 330	420 UL	360 UL	450 UL	410 UL	390 UL	330 UL	410 UL	390 U	370 U	390 U	10 U
Acenaphthylene		10 / 330	420 UL	360 UL	450 UL	410 UL	390 UL	330 UL	410 UL	390 U	370 U	390 U	10 U
3-Nitroaniline		50 / 1650	2000 UL	1700 UL	2200 UL	2000 UL	1900 UL	1600 UL	2000 UL	1900 U	1800 U	1900 U	50 U
Acenaphthene		10 / 330	420 UL	360 UL	450 UL	410 UL	390 UL	330 UL	410 UL	390 U	370 U	390 U	10 U
2,4-Dinitrophenol		10 / 330	2000 UL	1700 UL	2200 UL	2000 UL	1900 UL	1600 UL	2000 UL	1900 U	1800 U	1900 U	50 U
4-Nitrophenol		10 / 330	2000 UL	1700 UL	2200 UL	2000 UL	1900 UL	1600 UL	2000 UL	1900 U	1800 U	1900 U	50 U
Dibenzofuran		10 / 330	420 UL	360 UL	450 UL	410 UL	390 UL	330 UL	410 UL	390 U	370 U	390 U	10 U
2,6-Dinitrotoluene		10 / 330	420 UL	360 UL	450 UL	410 UL	390 UL	330 UL	410 UL	390 U	370 U	390 U	10 U

AR302089

TABLE 4-5

**SOIL BORING SAMPLES  
ANALYTICAL RESULTS**

**RECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA**

Dames & Moore Sample Number		Quantitation Limit (Ag/Soil)	R/L9 16-18' 12048-001	A/C5 18-20' 12139-001	A/C5 14-16' 12139-003	A/C5 4-6' 12139-004	A/K9A 8-10' 12139-005	A/H2 10-12' 12139-006	A/C11 16-18' 12262-001	R/A7A 6-8' 12262-002	R/G2 8-10' 12262-003	R/H3 8-10-12' 12262-005	FB
Laboratory Sample Number	Units		ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/l
SEMIVOLATILE COMPOUNDS													
2,4-Dinitrotoluene		10 / 330	420 UL	360 UL	450 UL	410 UL	390 UL	330 UL	410 UL	390 U	370 U	390 U	10 U
Diethylphthalate		50 / 1650	420 UL	360 UL	450 UL	410 UL	390 UL	330 UL	410 UL	390 U	370 U	390 U	10 U
4-Chlorophenylphenylether		10 / 330	420 UL	360 UL	450 UL	410 UL	390 UL	330 UL	410 UL	390 U	370 U	390 U	10 U
Fluorene		10 / 330	420 UL	360 UL	450 UL	410 UL	390 UL	330 UL	410 UL	390 U	370 U	390 U	10 U
4-Nitroaniline		10 / 330	200 UL	1700 UL	2200 UL	2000 UL	1900 UL	1600 UL	2000 UL	1900 U	1800 U	1900 U	50 U
4,6-Dinitro-2-methylphenol		50 / 1650	200 UL	1700 UL	2200 UL	2000 UL	1900 UL	1600 UL	2000 UL	1900 U	1800 U	1900 U	50 U
N-Nitrosodiphenylamine		10 / 330	420 UL	360 UL	450 UL	410 UL	390 UL	330 UL	410 UL	390 U	370 U	390 U	10 U
4-Bromophenylphenylether		10 / 330	420 UL	360 UL	450 UL	410 UL	390 UL	330 UL	410 UL	390 U	370 U	390 U	10 U
Hexachlorobenzene		10 / 330	420 UL	360 UL	450 UL	410 UL	390 UL	330 UL	410 UL	390 U	370 U	390 U	10 U
Pentachlorophenol		10 / 330	2000 UL	1700 UL	2200 UL	2000 UL	1900 UL	1600 U	2000 UL	1900 U	1800 U	1900 U	50 U
Phenanthrene		10 / 330	420 UL	360 UL	450 UL	410 UL	390 UL	330 UL	410 UL	390 U	370 U	390 U	10 U
Anthracene		10 / 330	420 UL	360 UL	450 UL	410 UL	390 UL	330 UL	410 UL	390 U	370 U	390 U	10 U
Di-n-butylphthalate		10 / 330	420 UL	360 UL	450 UL	410 UL	390 UL	330 UL	410 UL	390 U	370 U	390 U	10 U
Fluoranthene		10 / 330	420 UL	360 UL	450 UL	410 UL	390 UL	330 UL	410 UL	390 U	370 U	390 U	10 U
Pyrene		10 / 330	420 UL	360 UL	450 UL	410 UL	390 UL	330 UL	410 UL	390 U	370 U	390 U	10 U
Butylbenzylphthalate		10 / 330	420 UL	360 UL	450 UL	410 UL	390 UL	330 UL	410 UL	390 U	370 U	390 U	10 U
3,3'-Dichlorobenzidine		20 / 660	830 UL	720 UL	900 UL	820 UL	790 UL	660 UL	820 UL	770 U	740 U	770 U	20 U
Benzo(a)anthracene		10 / 330	420 UL	360 UL	450 UL	410 UL	390 UL	330 UL	410 UL	390 U	370 U	390 U	10 U
bis(2-Ethylhexyl)phthalate		10 / 330	420 UL	360 UL	450 UL	410 UL	62 JL	330 UL	410 UL	390 U	370 U	390 U	10 U

AR302090

TABLE 4-5

**SOIL BORING SAMPLES  
ANALYTICAL RESULTS**

**RECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA**

Dames & Moore Sample Number		Quantitation Limit (Ag/Soil)	R/L9 16-18' 12048-001	A/C5 18-20' 12139-001	A/C5 14-16' 12139-003	A/C5 4-6' 12139-004	A/K9A 8-10' 12139-005	A/H2 10-12' 12139-006	A/C11 16-18' 12262-001	R/A7A 6-8' 12262-002	R/G2 8-10' 12262-003	R/H3 8-10-12' 12262-005	FB
Laboratory Sample Number	Units												
SEMIVOLATILE COMPOUNDS													
Chrysene		10 / 330	420 UL	360 UL	450 UL	410 UL	390 UL	330 UL	410 UL	390 U	370 U	390 U	10 U
Di-n-octylphthalate		10 / 330	420 UL	360 UL	450 UL	410 UL	390 UL	330 UL	410 UL	390 U	370 U	390 U	10 U
Benzol(b)fluoranthene		10 / 330	420 UL	360 UL	450 UL	410 UL	390 UL	330 UL	410 UL	390 U	370 U	390 U	10 U
Benzol(k)fluoranthene		10 / 330	420 UL	360 UL	450 UL	410 UL	390 UL	330 UL	410 UL	390 U	370 U	390 U	10 U
Benzol(a)pyrene		10 / 330	420 UL	360 UL	450 UL	410 UL	390 UL	330 UL	410 UL	390 U	370 U	390 U	10 U
Indeno(1,2,3-cd)pyrene		10 / 330	420 UL	360 UL	450 UL	410 UL	390 UL	330 UL	410 UL	390 U	370 U	390 U	10 U
Dibenz(e,h)anthracene		10 / 330	420 UL	360 UL	450 UL	410 UL	390 UL	330 UL	410 UL	390 U	370 U	390 U	10 U
Benzol(g,h,i)perylene		10 / 330	420 UL	360 UL	450 UL	410 UL	390 UL	330 UL	410 UL	390 U	370 U	390 U	10 U
Total Confident Concentration of Semivolatiles													
Total Concentration of TICs													
Dilution Factor													
Date Sample Received			2/11	2/13	2/13	2/13	2/13	2/13	2/20	2/20	2/20	2/20	2/20
Date Sample Extracted			2/14	2/14	2/14	2/14	2/14	2/14	3/2	3/2	3/2	3/2	2/25
Date of Analysis			3/30*	3/30*	3/29*	3/30*	3/30*	3/30*	4/16*	4/6	4/6	4/7	4/6

U Compound was not detected.

J Quantitation is approximate due to limitations identified during the quality control review (data validation).

B This result is qualitatively suspect since this compound was detected in a field and/or laboratory blank(s) at a similar level.

R Unreliable result - Analyte may or may not be present in this sample.

UJ This analyte was not detected, but the quantitation limit is probably an estimated value.

\* Out of hold.

AAW014D1

AR302091

TABLE 4-5

SOIL BORING SAMPLES  
ANALYTICAL RESULTS

RECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA

Dames & Moore Sample Number		Quantitation Limit (Aq/Soil)	R/A7 9.5-11' 12205-001		R/A7 18.5-20' 12205-002		FB 003
Laboratory Sample Number			ug/kg	ug/kg	ug/kg	ug/l	
Units							
SEMIVOLATILE COMPOUNDS							
Phenol		10 / 330	360 U	350 U	10 U		
bis(2-Chloroethyl)ether		10 / 330	360 U	350 U	10 U		
2-Chlorophenol		10 / 330	360 U	350 U	10 U		
1,3-Dichlorobenzene		10 / 330	360 U	350 U	10 U		
1,4-Dichlorobenzene		10 / 330	360 U	350 U	10 U		
Benzyl Alcohol		10 / 330	360 U	350 U	10 U		
1,2-Dichlorobenzene		10 / 330	360 U	350 U	10 U		
2-Methyl Phenol		10 / 330	360 U	350 U	10 U		
bis(2-Chloroisopropyl)ether		10 / 330	360 U	350 U	10 U		
4-Methyl Phenol		10 / 330	360 U	350 U	10 U		
N-Nitroso-di-n-propylamine		10 / 330	360 U	350 U	10 U		
Hexachloroethane		10 / 330	360 U	350 U	10 U		
Nitrobenzene		10 / 330	360 U	350 U	10 U		
Isophorone		10 / 330	360 U	350 U	10 U		
2-Nitrophenol		10 / 330	360 U	350 U	10 U		
2,4-Dimethylphenol		10 / 330	360 U	350 U	10 U		
Benzoic Acid		50 / 1650	1800 U	1700 U	50 U		
bis(2-Chloroethoxy)methane		10 / 330	360 U	350 U	10 U		
2,4-Dichlorophenol		10 / 330	360 U	350 U	10 U		
1,2,4-Trichlorobenzene		10 / 330	360 U	350 U	10 U		
Naphthalene		10 / 330	360 U	350 U	10 U		

AR302092

TABLE 4-5

**SOIL BORING SAMPLES  
ANALYTICAL RESULTS**

**RECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA**

Dames & Moore Sample Number		Quantitation Limit (Aq/Soil)	R/A7 9.5-11' 12205-001	R/A7 18.5-20' 12205-002	FB 003
Laboratory Sample Number	ug/kg		ug/kg		
Units					
SEMIVOLATILE COMPOUNDS					
4-Chloroaniline		10 / 330	360 U	350 U	10 U
Hexachlorobutadiene		10 / 330	360 U	350 U	10 U
4-Chloro-3-methylphenol		10 / 330	360 U	350 U	10 U
2-Methylnaphthalene		10 / 330	360 U	350 U	10 U
Hexachlorocyclopentadiene		10 / 330	360 U	350 U	10 U
2,4,6-Trichlorophenol		10 / 330	360 U	350 U	10 U
2,4,5-Trichlorophenol		50 / 1650	1800 U	1700 U	50 U
2-Chloronaphthalene		10 / 330	360 U	350 U	10 U
2-Nitroaniline		10 / 330	1800 U	1700 U	50 U
Dimethylphthalate		10 / 330	360 U	350 U	10 U
Acenaphthylene		10 / 330	360 U	350 U	10 U
3-Nitroaniline		50 / 1650	1800 U	1700 U	50 U
Acenaphthene		10 / 330	360 U	350 U	10 U
2,4-Dinitrophenol		10 / 330	1800 U	1700 U	50 U
4-Nitrophenol		10 / 330	1800 U	1700 U	50 U
Dibenzofuran		10 / 330	360 U	350 U	10 U
2,6-Dinitrotoluene		10 / 330	360 U	350 U	10 U
2,4-Dinitrotoluene		10 / 330	360 U	350 U	10 U
Diethylphthalate		50 / 1650	360 U	350 U	10 U
4-Chlorophenylphenylether		10 / 330	360 U	350 U	10 U
Fluorene		10 / 330	360 U	350 U	10 U

AR302093

TABLE 4-5

**SOIL BORING SAMPLES  
ANALYTICAL RESULTS**

**RECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA**

Dames & Moore Sample Number		Quantitation Limit (Aq/Soil)	R/A7 9.5-11' 12205-001	R/A7 18.5-20' 12205-002	FB 003
Laboratory Sample Number	Units				
SEMIVOLATILE COMPOUNDS			ug/kg	ug/kg	ug/l
4-Nitroaniline		10 / 330	1800 U	1700 U	50 U
4,6-Dinitro-2-methylphenol		50 / 1650	1800 U	1700 U	50 U
N-Nitrosodiphenylamine		10 / 330	360 U	350 U	10 U
4-Bromophenylphenylether		10 / 330	360 U	350 U	10 U
Hexachlorobenzene		10 / 330	360 U	350 U	10 U
Pentachlorophenol		10 / 330	1800 U	1700 U	50 U
Phenanthrene		10 / 330	360 U	350 U	10 U
Anthracene		10 / 330	360 U	350 U	10 U
Di-n-butylphthalate		10 / 330	160 BJ	350 U	10 U
Fluoranthene		10 / 330	360 U	350 U	10 U
Pyrene		10 / 330	360 U	350 U	10 U
Butylbenzylphthalate		10 / 330	360 U	350 U	10 U
3,3'-Dichlorobenzidine		20 / 660	720 U	700 U	20 U
Benzo(a)anthracene		10 / 330	360 U	350 U	10 U
bis(2-Ethylhexyl)phthalate		10 / 330	360 U	350 U	4 J
Chrysene		10 / 330	360 U	350 U	10 U
Di-n-octylphthalate		10 / 330	360 U	350 U	10 U
Benzo(b)fluoranthene		10 / 330	360 U	350 U	10 U
Benzo(k)fluoranthene		10 / 330	360 U	350 U	10 U
Benzo(a)pyrene		10 / 330	360 U	350 U	10 U
Indeno(1,2,3-cd)pyrene		10 / 330	360 U	350 U	10 U

AR302094

TABLE 4-5

**SOIL BORING SAMPLES  
ANALYTICAL RESULTS**

**RECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA**

Danes & Moore Sample Number		R/A7 9.5-11' 12205-001	R/A7 18.5-20' 12205-002	FB 003
Laboratory Sample Number				
Units	Quantitation Limit (Aq/Soil)	ug/kg	ug/kg	ug/l
<b>SEMIVOLATILE COMPOUNDS</b>				
Dibenz(a,h)anthracene	10 / 330	360 U	350 U	10 U
Benzo(g,h,i)perylene	10 / 330	360 U	350 U	10 U
Total Confident Concentration of Semivolatiles				
Total Concentration of TICs				
Dilution Factor		1.0	1.0	1.0
Date Sample Received		2/15	2/15	2/15
Date Sample Extracted		4/16**	2/22	2/18
Date of Analysis		4/26	3/28	3/15

U Compound was not detected.

J Quantitation is approximate due to limitations identified during the quality control review (data validation).

B This result is qualitatively suspect since this compound was detected in a field and/or laboratory blank(s) at a similar level.

UJ This analyte was not detected, but the quantitation limit is probably an estimated value.

\*\* Extracted 46 days out of hold.

AAW014D1

AR302095

TABLE 4-5

SOIL BORING SAMPLES  
ANALYTICAL RESULTSRECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA

Dames & Moore Sample Number	R/L9 16-18' 18-20' Composite 12048-003 1353901	R/L9 18-20'	A/C5 18-20'	A/C5 14-18'	A/C5 4-6'	A/K9A 8-10'	A/H2 10-12'
Enseco Laboratory Sample Number Rocky Mtn. Analytical Sample Number	12048-003 1353901	12048-002 1353907	12139-001 1353902	12139-003 1353903	12139-004 1353904	12139-005 1353905	12139-006 1353906
Remarks							
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
INORGANICS							
Aluminum	9150	NR	4040	8200	4990	4830	6460
Antimony	10.0 UL	NR	9.0 UL	10.1 UL	10.0 UL	9.4 UL	9.2 UJ
Arsenic	1.6 JL	NR	2.7 L	1.51 L	2.0 L	2.1 L	1.5 L
Barium	181 J	NR	47.5 J	50.3 J	32.2 J	97.1 J	106 J
Beryllium	0.71 J	NR	0.44 U	0.49 U	0.49 U	0.59 B	0.49 J
Cadmium	0.98 U	NR	0.88 U	0.99 U	0.98 U	0.92 U	0.90 U
Calcium	460 J	NR	329 J	998 J	1190 J	540 J	424 J
Chromium	11.6	NR	17.9	12.4	21.4	21.7	21.7
Cobalt	9.4 J	NR	5.9 J	11.2 J	13.2	9.9 J	15.7
Copper	16.3	NR	22.4	18.4	16.3	9.7	9.9
Iron	18800 J	NR	11600 J	18300 J	15200 J	15100 J	21600 J
Lead	6.6 K	NR	5.3 K	12.3 K	15.3 K	10.1 K	7.2 K
Magnesium	1860 J	NR	1400 J	1500 J	953 J	1090 J	1350 J
Manganese	346 J	NR	330 J	494 J	619 J	584 J	1000 J
Mercury	0.12 U	NR	0.11 U	0.12 U	0.12 U	0.11 U	0.11 U
Nickel	10.4	NR	9.2	10.9	7.3 J	9.4	13.2
Potassium	786 J	NR	496 J	1050 J	855 J	754 J	807 J
Selenium	0.49 UL	NR	0.44 UL	0.49 UL	0.49 UL	0.46 U	0.45 UL
Silver	1.5 U	NR	1.3 U	1.5 U	1.5 U	1.4 U	1.3 U
Sodium	376 U	NR	338 U	379 U	377 U	353 U	346 U
Thallium	0.24 U	NR	0.22 U	0.25 U	0.24 U	0.23 U	0.22 U
Vanadium	22.2	NR	14.0	19.3	16.1	20.6	23.2
Zinc	37.1 J	NR	24.2 J	36.0 J	22.4 J	24.9 J	30.6 J
Cyanide	NR	0.57 U	0.55 U	0.62 U	0.61 U	0.57 U	0.56 U

U Element was not detected.

J Quantitation is approximate due to limitations identified during the quality control review (data validation).

NR Not required.

L Biased low.

K Biased high.

AAW014D1

AR302096

TABLE 4-5

**SOIL BORING SAMPLES  
ANALYTICAL RESULTS**

**RECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA**

Dames & Moore Sample Number	FB	A/C11 16-18'	R/A7A 6-8'	R/G2 8-10'	R/H3 12-14' 14-16' Composite 12262-006 1367204	FB	R/A7 9.5-11'	R/A7 18.5-20'
Ensaco Laboratory Sample Number	12262-007	12262-001	12262-002	12262-003		12205-003	12205-001	12205-002
Rocky Mtn. Analytical Sample Number	1367001	1367201	1367202	1367203		1361501	1361701	1361702
Remarks								
Units	mg/l	mg/kg	mg/kg	mg/kg	mg/kg	mg/l	mg/kg	mg/kg
<b>INORGANICS</b>								
Aluminum	33.0 U	5430	9440	8250	4270	65.8 J	7580	2290
Antimony	41.0 UL	19.3 UL	9.5 UL	9.2 UL	9.3 UL	41.0 UL	8.9 UL	9.4 UL
Arsenic	2.0 UL	1.2 L	0.81 L	0.45 UL	0.45 UL	2.0 UL	2.2 L	0.46 UL
Barium	3.0 UJ	65.4 J	62.3 J	317 J	225 J	6.7 J	68.3 J	38.3 J
Beryllium	2.0 U	0.48 J	0.93 J	1.3	0.85 J	2.0 U	0.43 U	0.46 U
Cadmium	4.0 U	0.90 U	0.93 U	0.90 U	0.91 U	4.0 U	0.86 U	0.92 U
Calcium	213 J	453 J	1480	443 J	308 J	1010 J	344 J	269 J
Chromium	5.0 U	12.6	15.2	8.9	6.6	5.0 U	16.5	2.6
Cobalt	8.0 U	10.1 J	11.9	15.1	7.3 J	8.0 U	10.4 J	4.7 J
Copper	10.0 U	9.8	11.9	2.3 U	2.6 J	10.0 U	9.7	4.7
Iron	24.0 UJ	13600 J	17500 J	9130 J	5240 J	61.7 J	14600 J	2300 J
Lead	1.0 U	7.9 K	4.4 K	15.7 K	3.2 K	2.5 K	7.1 K	1.1 K
Magnesium	74.0 U	1610 J	2130 J	2360 J	521 J	100 J	758 J	189 J
Manganese	7.0 UJ	747 J	439 J	1450 J	1100 J	7.0 UJ	410 J	270 J
Mercury	0.20 U	0.11 U	0.12 U	0.11 U	0.11 U	0.20 U	0.11 U	0.11 U
Nickel	13.0 U	9.7	18.9	31.7	12.1	13.0 U	5.3 J	3.3 J
Potassium	174 U	613 J	1380	1060 J	575 J	174 U	502 J	203 J
Selenium	2.0 UL	0.45 UL	0.46 UL	0.45 UL	0.45 UL	2.0 UL	0.43 UL	0.46 UL
Silver	6.0 U	1.4 U	1.4 U	1.4 U	1.4 U	6.0 U	1.3 U	1.4 U
Sodium	1540 U	348 U	357 U	347 U	349 U	1540 U	333 U	352 U
Thallium	1.0 UL	0.23 UL	0.23 UL	0.23 UL	0.23 UL	1.0 U	0.22 U	0.23 UL
Vanadium	5.0 U	18.1	20.8	8.4 J	9.1 J	5.0 U	20.1	4.1 J
Zinc	4.0 UJ	21.8 J	38.5 J	46.9 J	16.4 J	6.4 J	18.1 J	6.4 J
Cyanide	10.0 U	0.57 U	0.58 U	0.56 U	0.57 U	10.0 U	0.54 U	0.57 U

U Element was not detected.

J Quantitation is approximate due to limitations identified during the quality control review (data validation).

NR Not required.

L Biased low.

K Biased high.

AAW014D1

AR302097

TABLE 4-6

## MONITORING WELL CONSTRUCTION DETAILS

RECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA

WELL ID	COMPLETION DATE	GROUND SURFACE ELEVATION	TOP OF INNER CASING ELEVATION	TOTAL DEPTH (BELOW GROUND SURFACE)	SCREENED INTERVAL/ OPEN BOREHOLE (BELOW GROUND SURFACE)	SCREENED INTERVAL/ OPEN BOREHOLE ELEVATION
OB-1	2/14/91	138.34	140.18	29.25	12.25-27.25	126.09-111.09
OB-2	2/15/91	134.78	136.82	35.33	18-33	116.78-101.78
OB-3	2/20/91	132.91	134.71	25.25	8.25-23.25	124.66-109.66
OB-4	3/1/91	134.49	134.12	27	16-26	118.49-108.49
OB-5	2/21/91	128.29	129.84	23.33	12.33-22.33	115.96-105.96
OB-6	2/22/91	126.41	128.55	22	11-21	115.41-105.41
OB-7	2/22/91	126.62	128.59	23	12-22	114.62-104.62
OB-8	2/20/91	127.11	128.78	23.67	12.67-22.67	114.44-104.44
BR-1	2/28/91	138.21	140.16	70	37-70	101.21-68.21
BR-2	2/28/91	135.02	137.06	54	42.5-54	92.52-81.02
BR-3	2/28/91	133.24	135.49	65	38-65	95.24-68.24
BR-4	2/28/91	134.53	134.16	60	36-60	98.53-74.53
BR-5	3/1/91	128.24	130.34	63	34-63	94.24-65.24
BR-6	3/1/91	126.46	128.71	40	34-40	92.46-86.46
BR-7	3/1/91	126.53	128.24	50	30-50	96.53-76.53
BR-8	3/1/91	127.17	129.48	64	38.33-64	88.84-63.17

- Notes:
1. All dimensions in feet.
  2. Elevations in feet above mean sea level.
  3. Top of inner casing elevation refers to the top of the inner casing (PVC) for the overburden (OB) wells, or the top of the steel casing for the bedrock (BR) wells. Well BR-4 is a flush-mount well and top of inner casing refers to the inner steel casing.

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**TABLE 4-7**

**GROUND WATER ELEVATION DATA  
MARCH 4, 1991**

**RECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA**

WELL	TOP OF CASING ELEVATION (FT. MSL)*	DEPTH TO STATIC WATER LEVEL	WATER LEVEL ELEVATION (FT. MSL)
OB-1	140.18'	30.75'	109.43'
OB-2	136.82'	25.40'	111.42'
OB-3	134.71'	23.82'	110.89'
OB-4	134.12'	21.25'	112.87'
OB-5	129.84'	19.93'	109.91'
OB-6	128.55'	18.44'	110.11'
OB-7	128.59'	18.88'	109.71'
OB-8	128.78'	19.37'	109.41'
BR-1	140.16'	29.67'	110.49'
BR-2	137.06'	25.84'	111.22'
BR-3	135.49'	25.37'	110.12'
BR-4	134.16'	23.93'	110.23'
BR-5	130.34'	20.80'	109.54'
BR-6	128.71'	18.84'	109.87'
BR-7	128.24'	18.55'	109.69'
BR-8	129.48'	20.61'	108.87'

**Note:**

- \* Top of Casing (TOC) Elevation refers to the top of the inner casing (PVC) for the overburden wells, or the steel casing for the bedrock wells. Well BR-4 is a flush-mount well and TOC elevation refers to the inner steel casing.

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**TABLE 4-8**  
**GROUND WATER ELEVATION DATA**  
**APRIL 2, 1991**

**RECTICON/ALLIED STEEL SITE**  
**PARKER FORD, PENNSYLVANIA**

WELL	TOP OF CASING ELEVATION (FT. MSL)*	DEPTH TO STATIC WATER LEVEL	WATER LEVEL ELEVATION (FT. MSL)
OB-1	140.18'	28.53'	111.65
OB-2	136.82'	24.73'	112.09'
OB-3	134.71'	23.18'	111.53'
OB-4	134.12'	20.44'	113.68'
OB-5	129.84'	19.37'	110.47'
OB-6	128.55'	17.86'	110.69'
OB-7	128.59'	18.35'	110.24'
OB-8	128.78'	18.85'	109.93'
BR-1	140.16'	27.94'	112.22'
BR-2	137.06'	25.15'	111.91'
BR-3	135.49'	24.75'	110.74'
BR-4	134.16'	23.26'	110.90'
BR-5	130.34'	20.21'	110.13'
BR-6	128.71'	18.29'	110.42'
BR-7	128.24'	18.00'	110.24'
BR-8	129.48'	20.14'	109.34'

**Note:**

- \* Top of Casing (TOC) Elevation refers to the top of the inner casing (PVC) for the overburden wells, or the steel casing for the bedrock wells. Well BR-4 is a flush-mount well and TOC elevation refers to the inner steel casing.

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**TABLE 4-9**  
**GROUND WATER ELEVATION DATA**  
**JULY 10, 1991**

**RECTICON/ALLIED STEEL SITE**  
**PARKER FORD, PENNSYLVANIA**

WELL	TOP OF CASING ELEVATION (FT. MSL) *	DEPTH TO STATIC WATER LEVEL	WATER LEVEL ELEVATION (FT. MSL)
OB-1	140.18'	Dry	<109.08'
OB-2	136.82'	27.44'	109.38'
OB-3	134.71'	24.85'	109.86'
OB-4	134.12'	22.74'	111.38'
OB-5	129.84'	21.81'	108.03'
OB-6	128.55'	20.32'	108.23'
OB-7	128.59'	20.75'	107.84'
OB-8	128.78'	21.25'	107.53'
BR-1	140.16'	31.58'	108.58'
BR-2	137.06'	27.94'	109.12'
BR-3	135.49'	27.48'	108.01'
BR-4	134.16'	26.47'	107.69'
BR-5	130.34'	22.54'	107.80'
BR-6	128.71'	20.71'	108.00'
BR-7	128.24'	20.42'	107.82'
BR-8	129.48'	22.39'	107.09'

**Note:**

- \* Top of Casing (TOC) Elevation refers to the top of the inner casing (PVC) for the overburden wells, or the steel casing for the bedrock wells. Well BR-4 is a flush-mount well and TOC elevation refers to the inner steel casing.

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**TABLE 4-10**  
**GROUND WATER ELEVATION DATA**  
**SEPTEMBER 17, 1991**

**RECTICON/ALLIED STEEL SITE**  
**PARKER FORD, PENNSYLVANIA**

WELL	TOP OF CASING ELEVATION (FT. MSL) *	DEPTH TO STATIC WATER LEVEL	WATER LEVEL ELEVATION (FT. MSL)
OB-1	140.18'	Dry - Bottom 31.10'	< 109.08'
OB-2	136.82'	28.83'	107.99'
OB-3	134.71'	26.78'	107.93'
OB-4	134.12'	23.13'	110.99'
OB-5	129.84'	22.96'	106.88'
OB-6	128.55'	21.55'	107.00'
OB-7	128.59'	21.93'	106.66'
OB-8	128.78'	22.35'	106.43'
BR-1	140.18'	33.44'	106.72'
BR-2	137.06'	29.33'	107.73'
BR-3	135.49'	28.70'	106.79'
BR-4	134.16'	27.65'	106.51'
BR-5	130.34'	23.69'	106.65'
BR-6	128.71'	21.91'	106.80'
BR-7	128.24'	21.56'	106.68'
BR-8	129.48'	23.48'	106.00'

**Note:**

- \* Top of Casing (TOC) Elevation refers to the top of the inner casing (PVC) for the overburden wells, or the steel casing for the bedrock wells. Well BR-4 is a flush-mount well and TOC elevation refers to the inner steel casing.

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**TABLE 4-11****GROUND WATER ELEVATION DATA  
NOVEMBER 4, 1991****RECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA**

WELL	TOP OF CASING ELEVATION (FT. MSL)*	DEPTH TO STATIC WATER LEVEL	WATER LEVEL ELEVATION (FT. MSL)
OB-1	140.18'	Dry - Bottom 31.10'	<109.08'
OB-2	136.82'	29.52'	107.30'
OB-3	134.71'	Dry - Bottom 26.75'	<107.93'
OB-4	134.12'	23.58'	110.54'
OB-5	129.84'	23.54'	106.30'
OB-6	128.55'	22.11'	106.44'
OB-7	128.59'	22.43'	106.16'
OB-8	128.78'	22.91'	105.87'
BR-1	140.16'	33.96'	106.20'
BR-2	137.06'	30.00'	107.06'
BR-3	135.49'	29.27'	106.22'
BR-4	134.16'	28.14'	106.02'
BR-5	130.34'	24.27'	106.07'
BR-6	128.71'	22.44'	106.27'
BR-7	128.24'	22.09'	106.15'
BR-8	129.48'	23.91'	105.57'

**Note:**

- \* Top of Casing (TOC) Elevation refers to the top of the inner casing (PVC) for the overburden wells, or the steel casing for the bedrock wells. Well BR-4 is a flush-mount well and TOC elevation refers to the inner steel casing.

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TABLE 4-12

## SUMMARY OF OW-2 PUMPING TEST RESULTS

OBSERVATION WELL	DISTANCE FROM OW-2 (FEET)	EARLY TIME DATA		LATE TIME DATA		DATA PLOT	DATE MODE
		TRANSMISSIVITY (gpd/ft)	STORATIVITY	TRANSMISSIVITY (gpd/ft)	STORATIVITY		
OW-2	.25	361.6	7.625 E-1	2,445	5.919 E-4	Log-Log	Pumping
		368	6.51 E-1	3,520	2.35 E-3	Semi-Log	Pumping
		377	3.635 E-1	Flat	Flat	Log-Log	Recovery
		413	3.0 E-1	41.1	E-1	Semi-Log	Recovery
BR-5	38.3	353.4	2.003 E-4	5,601	1.354 E-7	Log-Log	Pumping
		U	U	7,040	TLP	Semi-Log	Pumping
		328.5	1.905 E-4	Flat	Flat	Log-Log	Recovery
OW-1	52.2	U	U	43,560	TLP	Semi-Log	Recovery
		3,700	2.528 E-3	26,200	2.305 E-4	Log-Log	Pumping
		4,280	1.86 E-3	35,200	5.38 E-5	Semi-Log	Pumping
		3,520	2.698 E-3	28,610	7.262 E-5	Log-Log	Recovery
BR-8	82	4,150	2.16 E-3	27,225	7.08 E-5	Semi-Log	Recovery
		28,720	1.997 E-3	150,700	6.316 E-6	Log-Log	Pumping
		U	U	144,000	TLP	Semi-Log	Pumping
		23,260	1.869 E-3	168,500	3.905 E-6	Log-Log	Recovery
BR-3	185	U	U	174,000	TLP	Semi-Log	Recovery
		22,300	4.611 E-3	90,830	6.220 E-6	Log-Log	Pumping
OB-5	40	23,500	4.29 E-3	70,400	6.86 E-5	Semi-Log	Pumping
		Flat	Flat	9,295	1.527 E-5	Semi-Log	Pumping
OB-8	40	U	U	10,320	9.67 E-1	Semi-Log	Pumping
		25,020	5.667 E-2	3,008	6.072 E-2	Log-Log	Pumping
OB-8	40	U	U	12,185	4.4 E-2	Semi-Log	Pumping
		U	U	U	U	Log-Log	Pumping

## Notes:

1. U = U value it too large to use the Jacob method to calculate transmissivity and storativity.
2. Flat = Drawdown curve is too flat to match to Their type curve and/or to calculate slope for Jacob method.
3. TLP = Slope of Jacob straight line is so small that the projected line is too long to plot the zero drawdown intercept reliably.
4. No recovery data were obtained for BR-3, OB-5, and OB-8. BR-3 data were corrected for interference from neighboring well.

**TABLE 4-13**

**PROJECTED DRAWDOWNS AT OBSERVATION WELLS  
AFTER PUMPING OW-2 AT 16.5 GPM FOR 30 DAYS**

WELL	R	T (gpd/ft)	s	D.D. (feet)
OW-2	.25	2,445	5.919 E-4	14.02
BR-5	38.3	5,601	1.354 E-7	6.53
OW-1	52.2	26,200	2.305 E-4	0.93
BR-8	82	150,700	6.316 E-6	0.22
BR-3	185	90,830	6.220 E-6	0.32

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TABLE 4-14

**GROUND WATER SAMPLE ANALYTICAL RESULTS**  
**APRIL 2, 1991**

**RECTICON/ALLIED STEEL SITE**  
**PARKER FORD, PENNSYLVANIA**

Dames & Moore Sample Number Laboratory Sample Number		TB 13072-001	FB 13072-002	OB-2 13072-003	OB-1 13072-004	OB-7 13072-005	OB-3 13072-006	OB-4 13072-007	OB-5 13072-008	OB-8 13072-009
Units	Quantitation Limit (ug/l)	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
VOLATILES										
Benzene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.12 J	0.50 U
Bromobenzene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Bromochloromethane	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Bromodichloromethane	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Bromoform	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Bromomethane	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
n-Butylbenzene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
sec-Butylbenzene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
tert-Butylbenzene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Carbon tetrachloride	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Chlorobenzene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Chloroethane	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Chloroform	0.50	0.50 U	0.50 U	0.16 J	0.50 U	0.50 U	0.50 U	0.50 U	0.060 J	0.080 J
Chloromethane	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
2-Chlorotoluene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
4-Chlorotoluene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Dibromochloromethane	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2-Dibromo-3-chloropropane (DBCP)	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2-Dibromomethane (EDB)	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Dibromomethane	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2-Dichlorobenzene	0.50	0.11 J	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.21 JB	0.50 U
1,3-Dichlorobenzene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,4-Dichlorobenzene	0.50	0.070 J	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U

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TABLE 4-14

**GROUND WATER SAMPLE ANALYTICAL RESULTS**  
**APRIL 2, 1991**

**RECTICON/ALLIED STEEL SITE**  
**PARKER FORD, PENNSYLVANIA**

Dames & Moore Sample Number Laboratory Sample Number		TB 13072-001	FB 13072-002	OB-2 13072-003	OB-1 13072-004	OB-7 13072-005	OB-3 13072-006	OB-4 13072-007	OB-5 13072-008	OB-8 13072-009
Units	Quantitation Limit (ug/l)	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
VOLATILES										
Dichlorodifluoromethane	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,1-Dichloroethane	0.50	0.50 U	0.50 U	0.59	0.50 U	0.50 U	0.50 U	0.50 U	2.5	3.1
1,2-Dichloroethane	0.50	0.50 U	0.50 U	0.18 J	0.50 U	0.50 U	0.50 U	0.50 U	2.9	3.5
1,1-Dichloroethene	0.50	0.50 U	0.50 U	0.77	0.50 U	0.50 U	0.50 U	0.50 U	0.28 J	0.30 J
cis-1,2-Dichloroethene	0.50	0.50 U	0.50 U	190 D	3.1	0.29 J	0.11 J	0.66	53 D	120 D
trans-1,2-Dichloroethene	0.50	0.50 U	0.50 U	0.19 J	0.50 U	0.50 U	0.50 U	0.50 U	0.33 J	0.22 J
1,2-Dichloropropane	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,3-Dichloropropane	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
2,2-Dichloropropane	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,1-Dichloropropene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
cis-1,3-Dichloropropene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
trans-1,3-Dichloropropene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Ethylbenzene	0.50	0.50 U	0.12 J	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Hexachlorobutadiene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1-Methylethylbenzene (Cumene)	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
p-Isopropyltoluene (p-Cymene)	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Methylene Chloride	0.50	0.17 J	0.12 J	0.23 JB	0.14 JB	0.11 JB	0.50 U	0.15 JB	0.99 B	1.2 B
Naphthalene	0.50	0.37 J	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
n-Propylbenzene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Styrene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,1,1,2-Tetrachloroethane	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
2,2,2-Tetrachloroethane	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Trichloroethane	0.50	0.50 U	0.08 J	0.50 U	0.50 U	1.8	0.50 U	0.50 U	0.12 JB	0.50 U

AR302107

TABLE 4-14

**GROUND WATER SAMPLE ANALYTICAL RESULTS**  
**APRIL 2, 1991**

**RECTICON/ALLIED STEEL SITE**  
**PARKER FORD, PENNSYLVANIA**

Dames & Moore Sample Number Laboratory Sample Number		TB 13072-001	FB 13072-002	OB-2 13072-003	OB-1 13072-004	OB-7 13072-005	OB-3 13072-006	OB-4 13072-007	OB-5 13072-008	OB-8 13072-009
Units	Quantitation Limit (ug/l)	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
<b>VOLATILES</b>										
Toluene	0.50	0.50 U	0.11 J	0.50 U	0.25 JB	0.080 JB	0.060 J	0.13 JB	0.25 JB	0.50 U
1,2,3-Trichlorobenzene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2,4-Trichlorobenzene	0.50	0.15 J	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,1,1-Trichloroethane	0.50	0.50 U	0.50 U	1.1	0.070 J	0.14 JB	0.50 U	0.050 J	2.4	2.9
1,1,2-Trichloroethane	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Trichloroethene	0.50	0.50 U	0.10 J	1,100 D	100 D	7.3	0.59 J	7.7	510 D	1,200 D
Trichlorofluoromethane	0.50	0.50 U	0.25 J	0.090 JB	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.060 JB
1,2,3-Trichloropropane	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2,4-Trimethylbenzene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,3,5-Trimethylbenzene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Vinyl chloride	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
o-Xylene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
m,p-Xylene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.080 J	0.50 U

U Compound was not detected.

J Quantitation is approximate due to limitations identified during the quality control review.

B Compound was detected in field and/or laboratory blank. Result is questionable.

D Dilution was required to bring sample into linear calibration range.

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TABLE 4-14

GROUND WATER SAMPLE ANALYTICAL RESULTS  
APRIL 2, 1991

RECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA

Dames & Moore Sample Number Laboratory Sample Number		OB-6 13072-010	BR-1 13072-012	BR-2 13072-013	BR-3 13072-014	BR-4 13072-015	BR-7 13072-016	BR-6 13072-017	BR-5 13072-018	BR-8 13072-019
Units	Quantitation Limit (ug/l)	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
VOLATILES										
Benzene	0.50	0.50 U	0.50 U	0.16 J	0.13 J	0.50 U	0.50 U	0.50 U	0.36 J	0.50 U
Bromobenzene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Bromochloromethane	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Bromodichloromethane	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Bromoform	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Bromomethane	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
n-Butylbenzene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
sec-Butylbenzene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
tert-Butylbenzene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Carbon tetrachloride	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Chlorobenzene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.19 J	0.50 U
Chloroethane	0.50	0.50 U	0.50 U	0.50 U	0.18 J	0.50 U	0.50 U	0.50 U	0.36 J	0.41 J
Chloroform	0.50	0.50 U	0.55	0.15 J	0.21 J	0.50 U	0.19 J	0.10 J	0.17 J	0.25 J
Chloromethane	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
2-Chlorotoluene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
4-Chlorotoluene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Dibromochloromethane	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2-Dibromo-3-chloropropane (DBCP)	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2-Dibromomethane (EDB)	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Dibromomethane	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2-Dichlorobenzene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.13 JB	0.50 U	0.50 U
1,4-Dichlorobenzene	0.50	0.50 U	0.50 U	0.05 J	0.50 U	0.50 U	0.50 U	0.070 J	0.50 U	0.50 U
1,2-Dichlorobenzene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.090 JB	0.50 U	0.50 U

AR302109

TABLE 4-14

GROUND WATER SAMPLE ANALYTICAL RESULTS  
APRIL 2, 1991RECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA

Dames & Moore Sample Number Laboratory Sample Number	Quantitation Limit (ug/l)		OB-6 13072-010	BR-1 13072-012	BR-2 13072-013	BR-3 13072-014	BR-4 13072-015	BR-7 13072-016	BR-6 13072-017	BR-5 13072-018	BR-8 13072-019
	Units		ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
VOLATILES											
Dichlorodifluoromethane		0.50	0.50 U	0.50 U	0.50 U	0.14 J	0.50 U	0.50 U	0.50 U	0.82	0.50 U
1,1-Dichloroethane		0.50	0.15 J	0.50 U	0.50 U	2.0	0.16 J	0.75	0.12 J	1.6	2.0
1,2-Dichloroethane		0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.69	0.50 U	1.2	0.50 U
1,1-Dichloroethane		0.50	0.50 U	0.50 U	1.3	2.3	0.50 U	0.50 U	0.50 U	1.7	2.8
cis-1,2-Dichloroethane		0.50	0.31 J	0.50 U	270 D	570 D	2.8	16	0.38 J	430 D	730 D
trans-1,2-Dichloroethane		0.50	0.50 U	0.50 U	0.24 J	0.81 J	0.50 U	0.50 U	0.50 U	0.86 J	0.73
1,2-Dichloropropane		0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,3-Dichloropropane		0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
2,2-Dichloropropane		0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,1-Dichloropropane		0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
cis-1,3-Dichloropropene		0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
trans-1,3-Dichloropropene		0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Ethylbenzene		0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Hexachlorobutadiene		0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1-Methylethylbenzene (Cumene)		0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
p-Isopropyltoluene (p-Cymene)		0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Methylene Chloride		0.50	0.50 U	0.17 JB	0.15 JB	0.50 U	0.17 JB	0.42 JB	0.16 JB	0.74 JB	0.24 JB
Naphthalene		0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
n-Propylbenzene		0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Styrene		0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,1,1,2-Tetrachloroethane		0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,1,1,2-Tetrachloroethane		0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Tetrachloroethane		0.50	13	0.50 U	0.50 U	0.11 B	0.50 U	3.6	5.5	0.50 U	0.50 U

AR302110

TABLE 4-14

**GROUND WATER SAMPLE ANALYTICAL RESULTS**  
**APRIL 2, 1991**

**RECTICON/ALLIED STEEL SITE**  
**PARKER FORD, PENNSYLVANIA**

Demes & Moore Sample Number Laboratory Sample Number		OB-6 13072-010	BR-1 13072-012	BR-2 13072-013	BR-3 13072-014	BR-4 13072-015	BR-7 13072-016	BR-6 13072-017	BR-5 13072-018	BR-8 13072-019
Units	Quantitation Limit (ug/l)	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
VOLATILES										
Toluene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.06 JB	0.50 U	0.50 U
1,2,3-Trichlorobenzene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.19 J	0.50 U	0.50 U
1,2,4-Trichlorobenzene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.15 JB	0.060 JB	0.50 U
1,1,1-Trichloroethane	0.50	0.070 J	0.50 U	0.39 J	1.2	0.50 U	1.3	0.10 J	2.2	1.9
1,1,2-Trichloroethane	0.50	0.50 U	0.50 U	0.50 U	0.3 J	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Trichloroethene	0.50	1.9	0.80	1,600 D	1,300 D	30	170 D	2.6	1,500 D	1,400 D
Trichlorofluoromethane	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.06 JB	0.50 U	0.50 U
1,2,3-Trichloropropane	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2,4-Trimethylbenzene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.05 J	0.50 U	0.50 U
1,3,5-Trimethylbenzene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Vinyl chloride	0.50	0.50 U	0.50 U	2.2	1.4	0.50 U	0.50 U	0.50 U	0.82	0.83
o-Xylene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
m,p-Xylene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.07 J	0.50 U	0.50 U

U Compound was not detected.

J Quantitation is approximate due to limitations identified during the quality control review.

B Compound was detected in field and/or laboratory blank. Result is questionable.

D Dilution was required to bring sample into linear calibration range.

AAW015AE

AR302111

**GROUND WATER SAMPLE ANALYTICAL RESULTS**  
**APRIL 2, 1991**

**RECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA**

[illegible]

AR302112

TABLE 4-14

**GROUND WATER SAMPLE ANALYTICAL RESULTS**  
**APRIL 2, 1991**

**RECTICON/ALLIED STEEL SITE**  
**PARKER FORD, PENNSYLVANIA**

Dames & Moore Sample Number Laboratory Sample Number		Quantitation Limit (Aq/Soil)	FB 13072-002	OB-2 13072-003	OB-7 13072-005	OB-3 13072-006	OB-4 13072-007	OB-5 13072-008	OB-8 13072-009	OB-6 13072-010	BR-1 13072-012	BR-2 13072-013
Units			ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
SEMIVOLATILE COMPOUNDS												
Naphthalene		10 / 330	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Chloroaniline		10 / 330	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Hexachlorobutadiene		10 / 330	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Chloro-3-methylphenol		10 / 330	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Methylnaphthalene		10 / 330	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Hexachlorocyclopentadiene		10 / 330	10 U	10 U	10 U	10 U	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
2,4,6-Trichlorophenol		10 / 330	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4,5-Trichlorophenol		50 / 1650	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U
2-Chloronaphthalene		10 / 330	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Nitroaniline		10 / 330	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U
Dimethylphthalate		10 / 330	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	2 J
Acenaphthylene		10 / 330	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
3-Nitroaniline		50 / 1650	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U
Acenaphthene		10 / 330	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dinitrophenol		50 / 1650	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U
4-Nitrophenol		10 / 330	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dibenzofuran		10 / 330	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,6-Dinitrotoluene		10 / 330	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dinitrotoluene		10 / 330	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Diethylphthalate		10 / 330	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U

AR302113

TABLE 4-14

**GROUND WATER SAMPLE ANALYTICAL RESULTS**  
**APRIL 2, 1991**

**RECTICON/ALLIED STEEL SITE**  
**PARKER FORD, PENNSYLVANIA**

Dames & Moore Sample Number Laboratory Sample Number		FB 13072-002	08-2 13072-003	08-7 13072-005	08-3 13072-006	08-4 13072-007	08-5 13072-008	08-8 13072-009	08-6 13072-010	BR-1 13072-012	BR-2 13072-013
Units	Quantitation Limit (Ag/Soil)	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
SEMIVOLATILE COMPOUNDS											
4-Chlorophenylphenylether	10 / 330	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Fluorene	10 / 330	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Nitroaniline	50 / 1650	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U
4,6-Dinitro-2-methylphenol	50 / 1650	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U
N-Nitrosodiphenylamine	10 / 330	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Bromophenylphenylether	10 / 330	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Hexachlorobenzene	10 / 330	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Pentachlorophenol	50 / 1650	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U
Phenanthrene	10 / 330	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Anthracene	10 / 330	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Di-n-butylphthalate	10 / 330	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Fluoranthene	10 / 330	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Pyrene	10 / 330	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Butylbenzylphthalate	10 / 330	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
3,3'-Dichlorobenzidine	20 / 660	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
Benzol(a)anthracene	10 / 330	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
bis(2-Ethylhexyl)phthalate	10 / 330	10 U	2 J	1 J	10 U	1 J	10 U	2 J	10 U	10 U	10 U
Chrysene	10 / 330	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Di-n-octylphthalate	10 / 330	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(b)fluoranthene	10 / 330	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U

AR302114

TABLE 4-14

**GROUND WATER SAMPLE ANALYTICAL RESULTS**  
**APRIL 2, 1991**

**RECTICON/ALLIED STEEL SITE**  
**PARKER FORD, PENNSYLVANIA**

Dames & Moore Sample Number Laboratory Sample Number		FB 13072-002	OB-2 13072-003	OB-7 13072-005	OB-3 13072-006	OB-4 13072-007	OB-5 13072-008	OB-8 13072-009	OB-6 13072-010	BR-1 13072-012	BR-2 13072-013
Units	Quantitation Limit (Ag/Soil)	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
SEMIVOLATILE COMPOUNDS											
Benzo(k)fluoranthene	10 / 330	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benz(a)pyrene	10 / 330	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Indeno(1,2,3-cd)pyrene	10 / 330	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dibenzo(a,h)anthracene	10 / 330	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzol(g,h,i)perylene	10 / 330	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dilution Factor		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Date Sample Received		4/6	4/6	4/6	4/6	4/6	4/6	4/6	4/6	4/6	4/6
Date Sample Extracted		4/10	4/10	4/10	5/10*, 4/10	4/10	4/10	4/10	5/10*, 4/10	4/10	4/10
Date of Analysis		5/9	5/9	5/9	5/4, 5/9	5/10	5/10	5/10	5/14, 5/10	5/10	5/10

U Compound was not detected.  
 J Quantitation is approximate due to limitations identified during the quality control review (data validation).  
 B This result is qualitatively suspect since this compound was detected in a field and/or laboratory blank(s) at a similar level.  
 R Unreliable result - Analyte may or may not be present in this sample.  
 UJ This analyte was not detected, but the quantitation limit is probably an estimated value.  
 . Re-extracted 20 days out of hold.

AR302115

TABLE 4-14

**GROUND WATER SAMPLE ANALYTICAL RESULTS  
APRIL 2, 1991**

**RECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA**

Dames & Moore Sample Number Laboratory Sample Number		BR-3 13072-014	BR-4 13072-015	BR-7 13072-016	BR-6 13072-017	BR-5 13072-018	BR-8 13072-019	OB-1 13072-020
Units	Quantitation Limit (Aq/Soil)	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
SEMIVOLATILE COMPOUNDS								
Phenol	10 / 330	10 UR	10 UR	10 U	10 UR	10 U	10 U	10 U
bis(2-Chloroethyl)ether	10 / 330	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Chlorophenol	10 / 330	10 UR	10 UR	10 U	10 UR	10 U	10 U	10 U
1,3-Dichlorobenzene	10 / 330	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,4-Dichlorobenzene	10 / 330	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzyl Alcohol	10 / 330	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichlorobenzene	10 / 330	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Methyl Phenol	10 / 330	10 U	10 U	10 U	10 U	10 U	10 U	10 U
bis(2-Chloroisopropyl)ether	10 / 330	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Methyl Phenol	10 / 330	10 U	10 U	10 U	10 U	10 U	10 U	10 U
N-Nitroso-di-n-propylamine	10 / 330	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Hexachloroethane	10 / 330	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Nitrobenzene	10 / 330	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Isophorone	10 / 330	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Nitrophenol	10 / 330	10 UR	10 UR	10 U	10 UR	10 U	10 U	10 U
2,4-Dimethylphenol	10 / 330	10 UR	10 UR	10 U	10 UR	10 U	10 U	10 U
Benzoic Acid	50 / 1650	50 U	50 U	50 U	50 U	50 U	50 U	50 U
bis(2-Chloroethoxy)methane	10 / 330	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dichlorophenol	10 / 330	10 UR	10 UR	10 U	10 UR	10 U	10 U	10 U
1,2,4-Trichlorobenzene	10 / 330	10 U	10 U	10 U	10 U	10 U	10 U	10 U

AR302116

TABLE 4-14

**GROUND WATER SAMPLE ANALYTICAL RESULTS**  
**APRIL 2, 1991**

**RECTICON/ALLIED STEEL SITE**  
**PARKER FORD, PENNSYLVANIA**

Dames & Moore Sample Number Laboratory Sample Number		BR-3 13072-014	BR-4 13072-015	BR-7 13072-016	BR-6 13072-017	BR-5 13072-018	BR-8 13072-019	OB-1 13072-020
Units	Quantitation Limit (Aq/Soil)	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
SEMIVOLATILE COMPOUNDS								
Naphthalene	10 / 330	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Chloroaniline	10 / 330	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Hexachlorobutadiene	10 / 330	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Chloro-3-methylphenol	10 / 330	10 UR	10 UR	10 U	10 UR	10 U	10 U	10 U
2-Methylnaphthalene	10 / 330	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Hexachlorocyclopentadiene	10 / 330	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4,6-Trichlorophenol	10 / 330	10 UR	10 UR	10 U	10 UR	10 U	10 U	10 U
2,4,5-Trichlorophenol	50 / 1650	50 UR	50 UR	50 U	50 UR	50 U	50 U	50 U
2-Chloronaphthalene	10 / 330	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Nitroaniline	10 / 330	50 U	50 U	50 U	50 U	50 U	50 U	50 U
Dimethylphthalate	10 / 330	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Acenaphthylene	10 / 330	10 U	10 U	10 U	10 U	10 U	10 U	10 U
3-Nitroaniline	50 / 1650	50 U	50 U	50 U	50 U	50 U	50 U	50 U
Acenaphthene	10 / 330	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dinitrophenol	50 / 1650	50 UR	50 UR	50 U	50 UR	50 U	50 U	50 U
4-Nitrophenol	10 / 330	50 UR	50 UR	50 U	50 UR	50 U	50 U	50 U
Dibenzofuran	10 / 330	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,6-Dinitrotoluene	10 / 330	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dinitrotoluene	10 / 330	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Diethylphthalate	10 / 330	10 U	10 U	10 U	10 U	10 U	10 U	10 U

AR302117

TABLE 4-14

**GROUND WATER SAMPLE ANALYTICAL RESULTS**  
**APRIL 2, 1991**

**RECTICON/ALLIED STEEL SITE**  
**PARKER FORD, PENNSYLVANIA**

Dames & Moore Sample Number Laboratory Sample Number		Quantitation Limit (Ag/Soil)	BR-3 13072-014	BR-4 13072-015	BR-7 13072-016	BR-6 13072-017	BR-5 13072-018	BR-8 13072-019	OB-1 13072-020
Units	ug/l		ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	
SEMIVOLATILE COMPOUNDS									
4-Chlorophenylphenylether	10 / 330	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Fluorene	10 / 330	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Nitroaniline	50 / 1650	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U
4,6-Dinitro-2-methylphenol	50 / 1650	50 UR	50 UR	50 U	50 UR	50 U	50 U	50 U	50 U
N-Nitrosodiphenylamine	10 / 330	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Bromophenylphenylether	10 / 330	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Hexachlorobenzene	10 / 330	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Pentachlorophenol	50 / 1650	50 UR	50 UR	50 U	50 UR	50 U	50 U	50 U	50 U
Phenanthrene	10 / 330	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Anthracene	10 / 330	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Di-n-butylphthalate	10 / 330	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Fluoranthene	10 / 330	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Pyrene	10 / 330	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Butylbenzylphthalate	10 / 330	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
3,3'-Dichlorobenzidine	20 / 660	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
Benzo(a)anthracene	10 / 330	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
bis(2-Ethylhexyl)phthalate	10 / 330	10 U	10 U	10 U	10 U	10 U	10 U	10 U	22
Chrysene	10 / 330	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Di-n-octylphthalate	10 / 330	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(b)fluoranthene	10 / 330	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U

AR302118

TABLE 4-14

**GROUND WATER SAMPLE ANALYTICAL RESULTS**  
**APRIL 2, 1991**

**RECTICON/ALLIED STEEL SITE**  
**PARKER FORD, PENNSYLVANIA**

Danes & Moore Sample Number Laboratory Sample Number		BR-3 13072-014	BR-4 13072-015	BR-7 13072-016	BR-6 13072-017	BR-5 13072-018	BR-8 13072-019	OB-1 13072-020
Units	Quantitation Limit (Ag/Soil)	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
<b>SEMI-VOLATILE COMPOUNDS</b>								
Benzol(k)fluoranthene	10 / 330	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzol(a)pyrene	10 / 330	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Indeno(1,2,3-cd)pyrene	10 / 330	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dibenz(a,h)anthracene	10 / 330	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzol(g,h,i)perylene	10 / 330	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dilution Factor		1.0	1.0	1.0	1.0	1.0	1.0	1.0
Date Sample Received		4/6	4/6	4/6	4/6	4/6	4/6	4/6
Date Sample Extracted		4/10	5/10*, 4/10	4/10	4/10	4/10	4/10	4/10
Date of Analysis		5/10	5/14, 5/10	5/12	5/12	5/12	5/12	5/12

U Compound was not detected.  
 J Quantitation is approximate due to limitations identified during the quality control review (data validation).  
 B This result is qualitatively suspect since this compound was detected in a field and/or laboratory blank(s) at a similar level.  
 R Unreliable result - Analyte may or may not be present in this sample.  
 UJ This analyte was not detected, but the quantitation limit is probably an estimated value.  
 . Re-extracted 20 days out of hold.

AR302119

TABLE 4-15

**COMPARISON OF MCLs TO INORGANIC PARAMETERS IN  
APRIL 2, 1991 GROUND WATER SAMPLES**

**RECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA**

Dames & Moore Sample Number Enseco Laboratory Sample Number Rocky Mtn. Analytical Sample Number	MCL (ug/l)	CRDL	Instrument Detection Limit (Aq/Soil)	FB 13072-002 1444501	OB-2 13072-003 1444502	OB-7 13072-005 1444503	OB-3 13072-006 1444504	OB-4 13072-007 1444505	OB-5 13072-008 1444506
Remarks				Total					
Units				ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
METALS									
Aluminum	200 <sup>(1)</sup>	200	26	26 U	1,740	7,730	2,800	4,060	16,600
Antimony	10/5	60	16	16 U	16 U	16 U	16 U	16 U	16 U
Arsenic	50	10	2	2 U	2 U	2 U	3.0 JL	2 U	3.8 JL
Barium	2,000	200	2	2 U	250	97.9	195 K	148 J	205
Beryllium	1	5	1	1 U	1.5 JB	1.2 JB	2.2 JB	1.2 JB	1.6 JB
Cadmium	5	5	4	4 U	4 U	4 U	4 U	4 U	4 U
Calcium		5,000	57	310 J	10,600	18,000	9,670	10,800	11,100
Chromium	100	10	6	6 U	6 U	15.3	24.8	7.6 J	25.4
Cobalt	-	50	4	4 U	5.9 J	13.2 J	112	6.8 J	20.0 J
Copper	1,300	25	6	6 U	8.6 J	19.2 JB	16.2 JB	8.4 JB	27.6 B
Iron	300 <sup>(1)</sup>	100	20	20 U	2,520	12,200	21,900	6,030	30,300
Lead	15 <sup>(2)</sup>	3	1	7.2	7.9 B	14.0 B	18.6 B	3.3 B	17.3 BL
Magnesium	-	5,000	66	66 U	7,770	7,360	12,500	6,290	13,100
Manganese	-	15	7	7 U	976	556	3,750	539	1,220
Mercury	2	0.2	0.2	0.2	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Nickel	100	40	7	7 U	14.2 J	21.2 J	60	14.2 J	42.9
Potassium	-	5,000	103	103 U	2,860 J	4,490 J	4,760 J	4,420 J	4,320 J
Selenium	50	5	2	2 UL	2 UL	2 UL	2 UL	2 UL	20 UDL
Silver	100 <sup>(1)</sup>	10	3	3 U	3 U	3 U	3 U	3 U	3 U
Sodium	-	5,000	1,230	1,230 U	11,200	8,940	5,780	6,840	28,400
Thallium	2/1	10	1	1 UL	1 UL	1 UL	1 UL	1 UL	1 UL
Vanadium	-	50	4	4 U	4 U	12 J	27.6 J	6.5 J	35.2 J
Zinc	5,000 <sup>(1)</sup>	20	2	22.4	82.7 B	98.4 B	107 B	48.6 B	99.2 B
Cyanide	200	10	10	10 U	10 U	10 U	10 U	10 U	10 U

- (1) Secondary MCL.  
 (2) The MCL for lead is at the receiving point (i.e., at the top).  
 U Element was not detected.  
 J Quantitation is approximate due to limitations identified during the quality control review.  
 B Element detected in blank result is questionable.  
 L Biased low.  
 D Sample analyzed at a dilution.  
 MCL Maximum contaminant level.  
 CRDL Contract required detection limit.

TABLE 4-15

**COMPARISON OF MCLs TO INORGANIC PARAMETERS IN  
APRIL 2, 1991 GROUND WATER SAMPLES**

**RECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA**

Dames & Moore Sample Number Enseco Laboratory Sample Number Rocky Mtn. Analytical Sample Number	MCL (ug/l)	CRDL	Instrument Detection Limit (Aq/Sol)	OB-8 13072-009 1444507	OB-6 13072-010 1444508	BR-1 13072-012 1444510	BR-2 13072-013 1444511	BR-3 13072-014 1444512
Remarks				Total				
Units				ug/l	ug/l	ug/l	ug/l	ug/l
METALS								
Aluminum	200 <sup>(1)</sup>	200	26	1,520	2,010	2,290	170 J	303
Antimony	10/5	60	16	16 U	16 U	16 U	16 U	16 U
Arsenic	50	10	2	2 U	2 U	2.1 J	2 U	2.4 J
Barium	2,000	200	2	95.7 J	40.2 J	273	232	280
Beryllium	1	5	1	1 U	2.8 JB	1.2 JB	1 U	1 U
Cadmium	5	5	4	4 U	4 U	4 U	4 U	4 U
Calcium		5,000	57	11,900	18,500	13,600	11,200	13,500
Chromium	100	10	6	6 U	6 U	6.7 J	6 U	6 U
Cobalt	-	50	4	4 U	22.4 JB	6.7 JB	4 U	8.3 J
Copper	1,300	25	6	6.8 JB	8.5 JB	10.3 JB	10.8 JB	9.7 J
Iron	300 <sup>(1)</sup>	100	20	2,110	1,320	31,400	41,100	36,300
Lead	15 <sup>(2)</sup>	3	1	2.7 JBL	1.5 JBL	2.8 JB	2.6 JB	1 U
Magnesium	-	5,000	66	11,400	10,800	11,300	7,610	9,010
Manganese	-	15	7	128	1,350	458	303	597
Mercury	2	0.2	0.2	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Nickel	100	40	7	18.2 J	29.3 J	19.7 J	7 U	11.6 J
Potassium	-	5,000	103	3,700	2,510 J	5,080	3,030 J	3,250 J
Selenium	50	5	2	20 ULD	2 UL	2 UL	2 UL	2 UL
Silver	100 <sup>(1)</sup>	10	3	3 U	3 U	3 U	3 U	3 U
Sodium	-	5,000	1,230	30,100	19,700	12,300	11,700	13,400
Thallium	2/1	10	1	1 UL	1 UL	1 UL	1 UL	1 UL
Vanadium	-	50	4	4 U	4 U	8.0 J	4 U	4 U
Zinc	5,000 <sup>(1)</sup>	20	2	19.3 JB	74.3 B	51.8 B	26.8 B	37 B
Cyanide	200	10	10	10 U	10 U	10 U	10 U	10 U

- (1) Secondary MCL.  
 (2) The MCL for lead is at the receiving point (i.e., at the top).  
 U Element was not detected.  
 J Quantitation is approximate due to limitations identified during the quality control review.  
 B Element detected in blank result is questionable.  
 L Biased low.  
 D Sample analyzed at a dilution.  
 MCL Maximum contaminant level.  
 CRDL Contract required detection limit.

TABLE 4-15

**COMPARISON OF MCLs TO INORGANIC PARAMETERS IN  
APRIL 2, 1991 GROUND WATER SAMPLES**

**RECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA**

Dames & Moore Sample Number Enseco Laboratory Sample Number Rocky Mtn. Analytical Sample Number	MCL (ug/l)	CRDL	Instrument Detection Limit (Aq/Soil)	BR-4 13072-015 1444513	BR-7 13072-016 1444514	BR-6 13072-017 1444515	BR-5 13072-018 1444516	BR-8 13072-019 1444517	1445203 & OB-1 13072-020 1444518 13072-011 144509
Remarks	Total								
Units	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
<b>METALS</b>									
Aluminum	200 <sup>(1)</sup>	200	26	108 J	322	80.4 J	391	524	2,140
Antimony	10/5	60	16	16 U	16 U	16 U	16 U	16 U	16 U
Arsenic	50	10	2	2 U	2 U	2 U	2 U	2 U	2 U
Barium	2,000	200	2	283	119 J	180 J	361	301	103 J
Beryllium	1	5	1	1 U	1 U	1 U	1 U	1 U	1 U
Cadmium	5	5	4	4 U	4 U	4 U	4 U	4 U	4 U
Calcium		5,000	57	16,100	14,100	11,300	15,300	13,500	41,400
Chromium	100	10	6	6 U	6 U	6 U	6.4 J	6.4 J	37.9
Cobalt	-	50	4	7.5 JB	4 U	5.5 J	4.3 J	9.1 J	4 U
Copper	1,300	25	6	8.9 JB	7.3 JB	10.7 JB	9.6 JB	7.4 JB	13.3 JB
Iron	300 <sup>(1)</sup>	100	20	37,300	6,910	37,300	14,300	7,330	2,210
Lead	15 <sup>(2)</sup>	3	1	1.4 JBL	3.2 B	1 UL	3.0 B	6.2 B	3.7 BL
Magnesium	-	5,000	66	10,200	9,450	7,990	9,060	7,620	8,740
Manganese	-	15	7	1,420	224	709	205	542	462
Mercury	2	0.2	0.2	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Nickel	100	40	7	8.1 J	15.7 J	8.6 J	9.6 J	9.6 J	24.8 J
Potassium	-	5,000	103	3,000 J	4,740 J	1,950 J	2,890 J	1,820 J	1,390 J
Selenium	50	5	2	20 ULD	2 UL	2 UL	20 ULD	2 UL	20 ULD
Silver	100 <sup>(1)</sup>	10	3	3 U	3 U	3 U	3 U	3 U	3 U
Sodium	-	5,000	1,230	17,200	20,800	15,000	18,800	17,300	35,000
Thallium	2/1	10	1	1 UL	1 UL	1 UL	1 UL	1 UL	1 UL
Vanadium	-	50	4	4 U	4 U	4 U	4 U	4 U	4 U
Zinc	5,000 <sup>(1)</sup>	20	2	24.6 B	26.1 B	26.2 B	17.3 JB	30.9 B	55 B
Cyanide	200	10	10	10 U	10 U	10 U	10 U	10 U	10 U

(1)

Secondary MCL

(2)

The MCL for lead is at the receiving point (i.e., at the top)

U

Element was not detected.

J

Quantitation is approximate due to limitations identified during the quality control review.

B

Element detected in blank result is questionable.

L

Biased low.

D

Sample analyzed at a dilution.

MCL

Maximum contaminant level.

CRDL

Contract required detection limit.

TABLE 4-15

**COMPARISON OF MCLs TO INORGANIC PARAMETERS IN  
APRIL 2, 1991 GROUND WATER SAMPLES**

**RECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA**

Dames & Moore Sample Number Enseco Laboratory Sample Number Rocky Mtn. Analytical Sample Number	MCL (ug/l)	CRDL	Instrument Detection Limit (Aq/Sol)	FB 13072-002 1444201	OB-2 13072-003 1444202	OB-1 13072-004 1444203	OB-7 13072-005 1444204	OB-3 13072-006 1444205	OB-4 13072-007 1444206
Remarks				Dissolved					
Units				ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
METALS									
Aluminum	200 <sup>(1)</sup>	200	26	26 U	26 U	26 U	26 U	26 U	26 U
Antimony	10/5	60	16	16 U	16 U	16 U	16 U	16 U	16 U
Arsenic	50	10	2	2 UL	2 UL	2 UL	2 UL	2 UL	2 UL
Barium	2,000	200	2	2 U	117 J	58.5 J	27.8 J	52. J	72.8 J
Beryllium	1	5	1	1 U	1 U	1 U	1 U	1 U	1 U
Cadmium	5	5	4	4 U	4 U	4 U	4 U	4 U	4 U
Calcium		5,000	57	246 JB	10,200	28,400	17,300	8,750	9,900
Chromium	100	10	6	6 U	6 U	6.1 J	6 U	6 U	6 U
Cobalt	-	50	4	4 U	4 U	4 J	4 U	84.9	4 U
Copper	1,300	25	6	10 U	10 U	12.3 J	11.7 J	15.6 J	1
Iron	300 <sup>(1)</sup>	100	20	20 U	20 U	20 U	20 U	20 U	20 U
Lead	15 <sup>(2)</sup>	3	1	1 U	1 U	1 U	1 U	1 U	1 U
Magnesium	-	5,000	66	66 U	7,280	7,610	5,310	9,210	5,190
Manganese	-	15	7	7 U	333 K	284 K	128 K	2,960 K	275 K
Mercury	2	0.2	0.2	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Nickel	100	40	7	7 U	9.3 J	7 U	7 U	32.5	7 U
Potassium	-	5,000	103	103 U	5,240	13,300	3,510 J	5,190	5,700
Selenium	50	5	2	2 UL	2 UL	2 UL	2.1 JL	2 UL	2 UL
Silver	100 <sup>(1)</sup>	10	3	3 U	3 U	3 U	3 U	3 U	3 U
Sodium	-	5,000	1,230	1,230 UJ	10,000 J	32,800 J	7,860 K	5,720 J	6,480 J
Thallium	2/1	10	1	1 U	1 UL	1 UL	1 UL	1 UL	1 UL
Vanadium	-	50	4	4 U	4 U	4 U	4 U	4 U	4 U
Zinc	5,000 <sup>(1)</sup>	20	2	11.9 JB	37.7 B	15.5 JB	48.2 B	49.2 B	55.9 B

- (1) Secondary MCL.  
 (2) The MCL for lead is at the receiving point (i.e., at the top)  
 U Element was not detected.  
 J Quantitation is approximate due to limitations identified during the quality control review.  
 B Element detected in blank result is questionable.  
 L Biased low.  
 D Sample analyzed at a dilution.  
 MCL Maximum contaminant level.  
 CRDL Contract required detection limit.

TABLE 4-15

**COMPARISON OF MCLs TO INORGANIC PARAMETERS IN  
APRIL 2, 1991 GROUND WATER SAMPLES**

**RECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA**

Dames & Moore Sample Number Enseco Laboratory Sample Number Rocky Mtn. Analytical Sample Number	MCL (ug/l)	CRDL	Instrument Detection Limit (Aq/Soil)	OB-5 13072-008 1445207	OB-8 13072-009 1445208	OB-6 13072-010 1445209	BR-1 13072-012 1445210	BR-2 13072-013 1445211	BR-3 13072-014 1445212
Remarks				Dissolved					
Units				ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
METALS									
Aluminum	200 <sup>(1)</sup>	200	26	26 U	26 U	671	26 U	26 U	26 U
Antimony	10/5	60	16	17.5 J	16 B	16 U	16 U	16 U	16 U
Arsenic	50	10	2	2 UL	2 UL	2 UL	2 U	2 UL	2 UL
Barium	2,000	200	2	57.2 J	73.3 J	27.5 J	188	20 B	261
Beryllium	1	5	1	1 U	1 U	2.4 J	1 U	1 U	1 U
Cadmium	5	5	4	4 U	4 U	4 U	4 U	4 U	4 U
Calcium		5,000	57	10,400	11,500	18,700	12,700	10,900	13,300
Chromium	100	10	6	6 U	6 U	6 U	6 U	6 U	6 U
Cobalt	-	50	4	4 U	4 U	20.6 J	4 U	4.0 U	4.6 B
Copper	1,300	25	6	14.6 J	17.5 J	18.4 J	12.9 J	10 U	10 U
Iron	300 <sup>(1)</sup>	100	20	20 U	20 U	20 U	2,840	18,300	25,900
Lead	15 <sup>(2)</sup>	3	1	1 UL	1 UL	1 UL	1 U	1 UL	1 UL
Magnesium	-	5,000	66	9,160	10,100	10,500 K	9,480 K	7,410 K	8,950 K
Manganese	-	15	7	53.5 K	321 K	1,340	209	279	558
Mercury	2	0.2	0.2	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Nickel	100	40	7	13.7 J	9.7 J	29.7 J	10.7 J	7.0 J	10.2 J
Potassium	-	5,000	103	3,500 J	5,590 J	2,570 J	4,903 J	4,180 J	3,280 J
Selenium	50	5	2	2 UL	2 UL	2 UL	2 UL	2 UL	2 UL
Silver	100 <sup>(1)</sup>	10	3	3 U	3 U	3 U	3 U	3 U	3 U
Sodium	-	5,000	1,230	29,400 J	25,600 J	18,000 J	12,700 J	11,300 J	13,200 J
Thallium	2/1	10	1	1 UL	1 UL	1 UL	1 UL	1 UL	1 UL
Vanadium	-	50	4	4 U	4 U	4 U	4 U	4 U	4 U
Zinc	5,000 <sup>(1)</sup>	20	2	55.3 B	46.1 B	97.7	66.7	41.9 B	30.2 B

- (1) Secondary MCL.  
 (2) The MCL for lead is at the receiving point (i.e., at the top).  
 U Element was not detected.  
 J Quantitation is approximate due to limitations identified during the quality control review.  
 B Element detected in blank result is questionable.  
 L Biased low.  
 D Sample analyzed at a dilution.  
 MCL Maximum contaminant level.  
 CRDL Contract required detection limit.

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TABLE 4-15

**COMPARISON OF MCLs TO INORGANIC PARAMETERS IN  
APRIL 2, 1991 GROUND WATER SAMPLES**

**RECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA**

Dames & Moore Sample Number Enseco Laboratory Sample Number Rocky Mtn. Analytical Sample Number	MCL (ug/l)	CRDL	Instrument Detection Limit (Aq/Soil)	BR-4 13072-015 1444213	BR-7 13072-016 1444214	BR-6 13072-017 1444215	BR-5 13072-018 1444216	BR-8 13072-019 1444217
Remarks				Dissolved				
Units				ug/l	ug/l	ug/l	ug/l	ug/l
METALS								
Aluminum	200 <sup>(1)</sup>	200	26	26 U	26 U	26 U	26 U	26 U
Antimony	10/5	60	16	16 U	16 U	16 U	16 U	19.1 J
Arsenic	50	10	2	2 UL	2 U	2 U	2 U	2 U
Barlum	2,000	200	2	226	114 J	164 J	318	263
Beryllium	1	5	1	1 U	1 U	1 U	1 U	1 U
Cadmium	5	5	4	4 U	4 U	4 U	4 U	4 U
Calcium		5,000	57	13,400	13,900	11,300	14,600	12,900
Chromium	100	10	6	6 U	6 U	6 U	6 U	6 U
Cobalt	-	50	4	4 U	4 U	4 U	4 U	4 U
Copper	1,300	25	6	10 U	10.3 J	10 U	10.1 J	10 U
Iron	300 <sup>(1)</sup>	100	20	17,700	2,850	23,000	3,190	2,690
Lead	15 <sup>(2)</sup>	3	1	1 UL	1 U	1 U	4.5	1 U
Magnesium	-	5,000	66	8,530 K	9,350 K	7,850	8,210 K	7,000 K
Manganese	-	15	7	1,200	195	702	159	460
Mercury	2	0.2	0.2	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Nickel	100	40	7	7 U	15.1 J	7 U	9.3 J	8.8 J
Potassium	-	5,000	103	3,270 J	5,310	4,020 J	4,080 J	2,070 J
Selenium	50	5	2	2 UL	2 UL	2 UL	2 UL	2 UL
Silver	100 <sup>(1)</sup>	10	3	3 U	3 U	3 U	3 U	3 U
Sodium	-	5,000	1,230	11,100 J	20,200 J	14,400 J	16,500 J	16,100 J
Thallium	2/1	10	1	1 UL	1 UL	1 UL	1 UL	1 UL
Vanadium	-	50	4	4 U	4 U	4 U	4 U	4 U
Zinc	5,000 <sup>(1)</sup>	20	2	33.4 B	38.7 B	29.5 B	27.6 B	56.7 B

- (1) Secondary MCL.  
 (2) The MCL for lead is at the receiving point (i.e., at the top)  
 U Element was not detected.  
 J Quantitation is approximate due to limitations identified during the quality control review.  
 B Element detected in blank result is questionable.  
 L Biased low.  
 D Sample analyzed at a dilution.  
 MCL Maximum contaminant level.  
 CRDL Contract required detection limit.

TABLE 4-16

GROUND WATER SAMPLE ANALYTICAL RESULTS  
JULY 10, 1991RECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA

Dumas & Moore Sample Number Laboratory Sample Number	Quantitation Limit (ug/l)	VOLATILES							
		TB 015001-017	FB 015001-002	OB-2 015001-003	OB-7 015001-011	OB-3 015001-004	OB-4 015001-006	OB-5 015001-005	OB-8 015001-009
Units		ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
Benzene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.12 J	0.50 U
Bromobenzene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Bromochloromethane	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Bromodichloromethane	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Bromoform	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Bromomethane	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
n-Butylbenzene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
sec-Butylbenzene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
tert-Butylbenzene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Carbon tetrachloride	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Chlorobenzene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Chloroethane	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Chloroform	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Chloromethane	0.50	0.50 UR	0.50 UR	0.50 UR	0.50 UR	0.50 UR	0.50 UR	0.50 UR	0.50 UR
2-Chlorotoluene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
4-Chlorotoluene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Dibromochloromethane	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2-Dibromo-3-chloropropane (DBCP)	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2-Dibromomethane (ED6)	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Dibromomethane	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2-Dichlorobenzene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,3-Dichlorobenzene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U

AR302126

TABLE 4-16

GROUND WATER SAMPLE ANALYTICAL RESULTS  
JULY 10, 1991

RECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA

Dames & Moore Sample Number Laboratory Sample Number		TB 015001-017	FB 015001-002	08-2 015001-003	08-7 015001-011	08-3 015001-004	08-4 015001-006	08-5 015001-005	08-8 015001-009
Units	Quantitation Limit ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
VOLATILES									
1,4-Dichlorobenzene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Dichlorodifluoromethane	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,1-Dichloroethane	0.50	0.50 U	0.50 U	5.1	0.50 U	0.50 U	0.50 U	1.7	3.0
1,2-Dichloroethane	0.50	0.50 U	0.50 U	5.0	0.50 U	0.50 U	0.50 U	2.5	4.5
1,1-Dichloroethene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
cis-1,2-Dichloroethene	0.50	0.71	0.50 U	13	0.26 JB	0.50 U	0.50 U	25	47 D
trans-1,2-Dichloroethene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2-Dichloropropane	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,3-Dichloropropane	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
2,2-Dichloropropane	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,1-Dichloropropene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
cis-1,3-Dichloropropene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
trans-1,3-Dichloropropene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Ethylbenzene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Hexachlorobutadiene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1-Methylethylbenzene (Cumene)	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
p-Isopropyltoluene (p-Cymene)	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Methylene Chloride	0.50	0.50 U	0.50 U	1.6	0.50 U	0.50 U	0.50 U	0.95	1.4
Naphthalene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
n-Propylbenzene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Styrene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,1,1,2-Tetrachloroethane	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U

AR302127

TABLE 4-16

**GROUND WATER SAMPLE ANALYTICAL RESULTS**  
**JULY 10, 1991**

**RECTICON/ALLIED STEEL SITE**  
**PARKER FORD, PENNSYLVANIA**

Dates & Sample Number		Quantitation Limit (ug/l)								
Laboratory Sample Number	Units		TB 015001-017	FB 015001-002	08-2 015001-003	08-7 015001-011	08-3 015001-004	08-4 015001-008	08-5 015001-006	08-8 015001-009
VOLATILES			ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
1,1,2,2-Tetrachloroethane		0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Tetrachloroethane		0.50	0.50 U	0.50 U	0.50 U	1.3	0.50 U	0.50 U	0.50 U	0.40 J
Toluene		0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2,3-Trichlorobenzene		0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2,4-Trichlorobenzene		0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,1,1-Trichloroethane		0.50	0.50 U	0.50 U	0.50 U	0.38 J	0.50 U	0.50 U	0.50 U	0.50 U
1,1,2-Trichloroethane		0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Trichloroethane		0.50	3.4	2.6	11.8	5.9 B	0.45 J	0.41 J	67 D	240 D
Trichlorofluoromethane		0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2,3-Trichloropropane		0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2,4-Trimethylbenzene		0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,3,5-Trimethylbenzene		0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Vinyl chloride		0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
o-Xylene		0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
m,p-Xylene		0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.11 J	0.50 U	0.50 U

U Compound was not detected.

J Quantitation is approximate due to limitations identified during the quality control review.

B Compound was detected in field and/or laboratory blank. Result is questionable.

D Dilution was required to bring sample into linear calibration range.

GROUND WATER SAMPLE ANALYTICAL RESULTS  
JULY 10, 1991

## RECTICON/ALLIED STEEL SITE

Dames & Moore Sample Number Laboratory Sample Number		OB-6 015001-010	BR-1 015001-007	BR-2 015001-001	BR-3 015001-013	BR-4 015001-008	BR-7 015001-015	BR-6 015001-014	BR-5 015001-012	BR-8 015001-016
Units	Quantitation Limit (ug/l)	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
VOLATILES										
Benzene	0.50	0.50 U	0.50 U	50 U	0.50 U	0.50 U	0.50 U	0.50 U	5 U	0.15 J
Bromobenzene	0.50	0.50 U	0.50 U	50 U	0.50 U	0.50 U	0.50 U	0.50 U	5 U	0.50 U
Bromochloromethane	0.50	0.50 U	0.50 U	50 U	0.50 U	0.50 U	0.50 U	0.50 U	5 U	0.50 U
Bromodichloromethane	0.50	0.50 U	0.50 U	50 U	0.50 U	0.50 U	0.50 U	0.50 U	5 U	0.50 U
Bromoform	0.50	0.50 U	0.50 U	50 U	0.50 U	0.50 U	0.50 U	0.50 U	5 U	0.50 U
Bromomethane	0.50	0.50 U	0.50 U	50 U	0.50 U	0.50 U	0.50 U	0.50 U	5 U	0.50 U
n-Butylbenzene	0.50	0.50 U	0.50 U	50 U	0.50 U	0.50 U	0.50 U	0.50 U	5 U	0.50 U
sec-Butylbenzene	0.50	0.50 U	0.50 U	50 U	0.50 U	0.50 U	0.50 U	0.50 U	5 U	0.50 U
tert-Butylbenzene	0.50	0.50 U	0.50 U	50 U	0.50 U	0.50 U	0.50 U	0.50 U	5 U	0.50 U
Carbon tetrachloride	0.50	0.50 U	0.50 U	50 U	0.50 U	0.50 U	0.50 U	0.50 U	5 U	0.50 U
Chlorobenzene	0.50	0.50 U	0.50 U	50 U	0.50 U	0.50 U	0.50 U	0.50 U	5 U	0.50 U
Chloroethane	0.50	0.50 U	0.50 U	50 U	0.50 U	0.50 U	0.50 U	0.50 U	5 U	0.47 J
Chloroform	0.50	0.50 U	0.50 U	50 U	0.26 J	0.50 U	0.50 U	0.50 U	5 U	0.20 J
Chloromethane	0.50	0.50 UR	0.50 UR	50 UR	0.50 UR	0.50 UR	0.50 UR	0.50 UR	5 UR	0.50 UR
2-Chlorotoluene	0.50	0.50 U	0.50 U	50 U	0.50 U	0.50 U	0.50 U	0.50 U	5 U	0.50 U
4-Chlorotoluene	0.50	0.50 U	0.50 U	50 U	0.50 U	0.50 U	0.50 U	0.50 U	5 U	0.50 U
Dibromochloromethane	0.50	0.50 U	0.50 U	50 U	0.50 U	0.50 U	0.50 U	0.50 U	5 U	0.50 U
1,2-Dibromo-3-chloropropane (DBCP)	0.50	0.50 U	0.50 U	50 U	0.50 U	0.50 U	0.50 U	0.50 U	5 U	0.50 U
1,2-Dibromomethane (EDB)	0.50	0.50 U	0.50 U	50 U	0.50 U	0.50 U	0.50 U	0.50 U	5 U	0.50 U
Dibromomethane	0.50	0.50 U	0.50 U	50 U	0.50 U	0.50 U	0.50 U	0.50 U	5 U	0.50 U
1,2-Dichlorobenzene	0.50	0.50 U	0.50 U	50 U	0.50 U	0.50 U	0.50 U	0.50 U	5 U	0.50 U
1,2-Dichlorobenzene	0.50	0.50 U	0.50 U	50 U	0.50 U	0.50 U	0.50 U	0.50 U	5 U	0.50 U

AR302129

TABLE 4-16

GROUND WATER SAMPLE ANALYTICAL RESULTS  
JULY 10, 1991RECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA

Dames & Moore Sample Number Laboratory Sample Number		OB-6 015001-010	BR-1 015001-007	BR-2 015001-001	BR-3 015001-013	BR-4 015001-008	BR-7 015001-015	BR-6 015001-014	BR-5 015001-012	BR-8 015001-016
Units	Quantitation Limit (ug/l)	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
VOLATILES										
1,4-Dichlorobenzene	0.50	0.50 U	0.50 U	50 U	0.50 U	0.50 U	0.50 U	0.50 U	5 U	0.50 U
Dichlorodifluoromethane	0.50	0.50 U	0.50 U	50 U	0.50 U	0.50 U	0.50 U	0.50 U	5 U	0.50 U
1,1-Dichloroethane	0.50	0.15 J	0.50 U	50 U	2.2	0.48 J	0.56	0.50 U	5 U	2.0
1,2-Dichloroethane	0.50	0.50 U	0.50 U	50 U	0.50 U	0.50 U	0.50 U	0.50 U	5 U	0.50 U
1,1-Dichloroethene	0.50	0.50 U	0.50 U	50 U	2.9	0.19 J	0.50 U	0.50 U	5 U	2.7
cis-1,2-Dichloroethene	0.50	0.36 J8	0.50 U	170 D	680 D	14	12	1.88	200 D	700 D
trans-1,2-Dichloroethene	0.50	0.50 U	0.50 U	50 U	0.64	0.50 U	0.50 U	0.50 U	5 U	8.4
1,2-Dichloropropane	0.50	0.50 U	0.50 U	50 U	0.50 U	0.50 U	0.50 U	0.50 U	5 U	0.50 U
1,3-Dichloropropane	0.50	0.50 U	0.50 U	50 U	0.50 U	0.50 U	0.50 U	0.50 U	5 U	0.50 U
2,2-Dichloropropane	0.50	0.50 U	0.50 U	50 U	0.50 U	0.50 U	0.50 U	0.50 U	5 U	0.50 U
1,1-Dichloropropene	0.50	0.50 U	0.50 U	50 U	0.50 U	0.50 U	0.50 U	0.50 U	5 U	0.50 U
cis-1,3-Dichloropropene	0.50	0.50 U	0.50 U	50 U	0.50 U	0.50 U	0.50 U	0.50 U	5 U	0.50 U
trans-1,3-Dichloropropene	0.50	0.50 U	0.50 U	50 U	0.50 U	0.50 U	0.50 U	0.50 U	5 U	0.50 U
Ethylbenzene	0.50	0.50 U	0.50 U	50 U	0.50 U	0.50 U	0.50 U	0.50 U	5 U	0.50 U
Hexachlorobutadiene	0.50	0.50 U	0.50 U	50 U	0.50 U	0.50 U	0.50 U	0.50 U	5 U	0.50 U
1-Methylethylbenzene (Cumene)	0.50	0.50 U	0.50 U	50 U	0.50 U	0.50 U	0.50 U	0.50 U	5 U	0.50 U
p-Isopropyltoluene (p-Cymene)	0.50	0.50 U	0.50 U	50 U	0.50 U	0.50 U	0.50 U	0.50 U	5 U	0.50 U
Methylene Chloride	0.50	0.50 U	0.19 J	50 U	0.50 U	0.50 U	0.50 U	0.21 J	4.2 D	0.50 U
Naphthalene	0.50	0.50 U	0.50 U	50 U	0.50 U	0.50 U	0.50 U	0.50 U	5 U	0.50 U
n-Propylbenzene	0.50	0.50 U	0.50 U	50 U	0.50 U	0.50 U	0.50 U	0.50 U	5 U	0.50 U
Styrene	0.50	0.50 U	0.50 U	50 U	0.50 U	0.50 U	0.50 U	0.50 U	5 U	0.50 U
1,1,1,2-Tetrachloroethane	0.50	0.50 U	0.50 U	50 U	0.50 U	0.50 U	0.50 U	0.50 U	5 U	0.50 U

AR302130

TABLE 4-16

GROUND WATER SAMPLE ANALYTICAL RESULTS  
JULY 10, 1991RECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA

Dames & Moore Sample Number Laboratory Sample Number		OB 6 015001-010	BR-1 015001-007	BR-2 015001-001	BR-3 015001-013	BR-4 015001-008	BR-7 015001-015	BR-6 015001-014	BR-5 015001-012	BR-8 015001-016
Units	Quantitation Limit (ug/l)	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
VOLATILES										
1,1,2,2-Tetrachloroethane	0.50	0.50 U	0.50 U	50 U	0.50 U	0.50 U	0.50 U	0.50 U	5 U	0.50 U
Tetrachloroethene	0.50	14	0.50 U	50 U	0.16 J	0.50 U	4.3	6.6	5 U	0.50 U
Toluene	0.50	0.50 U	0.50 U	50 U	0.50 U	0.50 U	0.50 U	0.50 U	5 U	0.50 U
1,2,3-Trichlorobenzene	0.50	0.50 U	0.50 U	50 U	0.50 U	0.50 U	0.50 U	0.50 U	5 U	0.50 U
1,2,4-Trichlorobenzene	0.50	0.50 U	0.50 U	50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,1,1-Trichloroethane	0.50	0.15 J	0.50 U	50 U	0.50 U	0.29 J	1.0	0.50 U	2.1 JD	2.1
1,1,2-Trichloroethene	0.50	0.50 U	0.50 U	50 U	0.50 U	0.50 U	0.50 U	0.50 U	5 U	0.50 U
Trichloroethene	0.50	0.88 B	0.46 JB	940 D	1,900 D	150 D	90 D	5.4 B	970 D	1,400 D
Trichlorofluoromethane	0.50	0.50 U	0.50 U	50 U	0.50 U	0.50 U	0.50 U	0.50 U	5 U	0.50 U
1,2,3-Trichloropropane	0.50	0.50 U	0.50 U	50 U	0.50 U	0.50 U	0.50 U	0.50 U	5 U	0.50 U
1,2,4-Trimethylbenzene	0.50	0.50 U	0.50 U	50 U	0.50 U	0.50 U	0.50 U	0.50 U	5 U	0.50 U
1,3,5-Trimethylbenzene	0.50	0.50 U	0.50 U	50 U	0.50 U	0.50 U	0.50 U	0.50 U	5 U	0.50 U
Vinyl chloride	0.50	0.50 U	0.50 U	50 U	2.0	0.50 U	0.50 U	0.50 U	5 U	0.93
o-Xylene	0.50	0.50 U	0.50 U	50 U	0.50 U	0.50 U	0.50 U	0.50 U	5 U	0.50 U
m,p-Xylene	0.50	0.50 U	0.50 U	50 U	0.50 U	0.50 U	0.50 U	0.50 U	5 U	0.50 U

U Compound was not detected.

J Quantitation is approximate due to limitations identified during the quality control review.

B Compound was detected in field and/or laboratory blank. Result is questionable.

D Dilution was required to bring sample into linear calibration range.

AAW01948

AR302131

TABLE 4-17

**GROUND WATER SAMPLE ANALYTICAL RESULTS  
SEPTEMBER 17 AND 18, 1991**

**RECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA**

Danes & Moore Sample Number Laboratory Sample Number		TB 16262-001	FB 16262-008	OB-2 16262-002	OB-7 16262-006	OB-4 16262-003	OB-5 16262-004	OB-8 16262-007
Units	Quantitation Limit (ug/l)	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
<b>VOLATILES</b>								
Benzene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Bromobenzene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Bromochloromethane	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Bromodichloromethane	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Bromoform	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Bromomethane	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
n-Butylbenzene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
sec-Butylbenzene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
tert-Butylbenzene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Carbon tetrachloride	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Chlorobenzene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Chloroethane	0.50	0.50 U	0.50 U	0.37 J	0.50 U	0.50 U	0.50 U	0.50 U
Chloroform	0.50	0.16 JB	0.50 U	0.80 JB	0.50 U	0.50 U	0.50 U	0.060 JB
Chloromethane	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	4.3 U	0.50 U
2-Chlorotoluene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
4-Chlorotoluene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Dibromochloromethane	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2-Dibromo-3-chloropropane (DBCP)	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2-Dibromomethane (EDB)	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Dibromomethane	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U

AR302132

**GROUND WATER SAMPLE ANALYTICAL RESULTS  
SEPTEMBER 17 AND 18, 1991**

**RECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA**

Dames & Moore Sample Number Laboratory Sample Number		TB 16262-001	FB 16262-008	OB-2 16262-002	OB-7 16262-006	OB-4 16262-003	OB-5 16262-004	OB-8 16262-007
Units	Quantitation Limit (ug/l)	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
VOLATILES								
1,2-Dichlorobenzene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,3-Dichlorobenzene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,4-Dichlorobenzene	0.50	0.50 U	0.13 JB	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Dichlorodifluoromethane	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,1-Dichloroethane	0.50	0.50 U	0.50 U	10	0.50 U	0.50 U	2.3	4.1
1,2-Dichloroethane	0.50	0.50 U	0.50 U	4.7	0.50 U	0.50 U	2.2	4.9
1,1-Dichloroethane	0.50	0.50 U	0.50 U	0.41 J	0.50 U	0.50 U	0.50 U	0.15 J
cis-1,2-Dichloroethane	0.50	0.50 U	0.50 U	67 D	0.13 J	0.50 U	21	50 D
trans-1,2-Dichloroethane	0.50	0.50 U	0.50 U	0.34 J	0.50 U	0.50 U	0.13	0.21 J
1,2-Dichloropropane	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,3-Dichloropropane	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
2,2-Dichloropropane	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,1-Dichloropropane	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
cis-1,3-Dichloropropene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
trans-1,3-Dichloropropene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Ethylbenzene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Hexachlorobutadiene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1-Methylethylbenzene (Cumene)	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
p-Isopropyltoluene (p-Cymene)	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Methylene Chloride	0.50	0.30 JB	0.05	2.2 B	0.36 JB	0.29 JB	0.86 B	1.2 B

AR302133

TABLE 4-17

GROUND WATER SAMPLE ANALYTICAL RESULTS  
SEPTEMBER 17 AND 18, 1991RECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA

Dames & Moore Sample Number Laboratory Sample Number		TB 16262-001	FB 16262-008	OB-2 16262-002	OB-7 16262-006	OB-4 16262-003	OB-5 16262-004	OB-8 16262-007
Units	Quantitation Limit (ug/l)	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
VOLATILES								
Naphthalene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
n-Propylbenzene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Styrene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,1,1,2-Tetrachloroethane	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,1,2,2-Tetrachloroethane	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Tetrachloroethane	0.50	0.50 U	0.50 U	0.17 J	3.7	0.50 U	0.070 J	0.080 J
Toluene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.080 J	0.50 U	0.50 U
1,2,3-Trichlorobenzene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2,4-Trichlorobenzene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,1,1-Trichloroethane	0.50	0.50 U	0.50 U	6.2	0.11 J	0.50 U	1.7	3.0
1,1,2-Trichloroethane	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Trichloroethane	0.50	0.50 U	0.50 U	100 D	2.4	0.17 J	48 D	130 D
Trichlorofluoromethane	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2,3-Trichloropropane	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2,4-Trimethylbenzene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,3,5-Trimethylbenzene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Vinyl chloride	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
o-Xylene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
m,p-Xylene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U

AR302134

TABLE 4-17

**GROUND WATER SAMPLE ANALYTICAL RESULTS**  
**SEPTEMBER 17 AND 18, 1991**

**RECTICON/ALLIED STEEL SITE**  
**PARKER FORD, PENNSYLVANIA**

Dames & Moore Sample Number Laboratory Sample Number	TB 16262-001 ug/l	FB 16262-008 ug/l	OB-2 16262-002 ug/l	OB-7 16262-006 ug/l	OB-4 16262-003 ug/l	OB-5 16262-004 ug/l	OB-8 16262-007 ug/l
Units	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
VOLATILES	Quantitation Limit (ug/l)						
<b>Tentatively Identified Compounds</b>							
Carbon Disulfide	0.50	3.1 JB	13 JB	17 JB	1.3 JB	4.9 JB	6.8 JB
tert-butylmethylether	--	ND	ND	1.2 J	ND	ND	0.72 J
CSH10 isomer	--	ND	ND	ND	ND	ND	ND
Unknown	--	ND	ND	ND	ND	2.0 J	ND

U Compound was not detected.  
 J Quantitation is approximate due to limitations identified during the quality control review.  
 B Compound was detected in field and/or laboratory blank. Result is questionable.  
 D Dilution was required to bring sample into linear calibration range.

AAW01948

AR302135

TABLE 4-17

GROUND WATER SAMPLE ANALYTICAL RESULTS  
SEPTEMBER 17 AND 18, 1991RECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA

Dames & Moore Sample Number Laboratory Sample Number	OB-6 16262-005	BR-1 16262-009	BR-2 16262-010	BR-3 16262-011	BR-4 16262-012	BR-7 16262-015	BR-6 16262-014	BR-5 16262-013	BR-8 16262-016
Units	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
VOLATILES									
Benzene	0.50	0.50 U	0.080 J	0.17 J	0.50 U	0.50 U	0.50 U	0.12 J	25 U
Bromobenzene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	25 U
Bromochloromethane	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	25 U
Bromodichloromethane	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	25 U
Bromoform	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	25 U
Bromomethane	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	25 U
n-Butylbenzene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	25 U
sec-Butylbenzene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	25 U
tert-Butylbenzene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	25 U
Carbon tetrachloride	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	25 U
Chlorobenzene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	25 U
Chloroethane	0.50	0.50 U	0.50 U	0.31 J	0.50 U	0.50 U	0.50 U	0.32 J	25 U
Chloroform	0.50	0.50 U	0.080 JB	0.25 JB	0.070 JB	0.060 JB	0.50 U	0.14 JB	25 U
Chloromethane	0.50	0.50 U	1.0	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	25 U
2-Chlorotoluene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	25 U
4-Chlorotoluene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	25 U
Dibromochloromethane	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	25 U
1,2-Dibromo-3-chloropropane (DBCP)	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	25 U
1,2-Dibromomethane (EDB)	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	25 U
Dibromomethane	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	25 U

AR302136

TABLE 4-17

**GROUND WATER SAMPLE ANALYTICAL RESULTS  
SEPTEMBER 17 AND 18, 1991**

**RECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA**

Dames & Moore Sample Number Laboratory Sample Number		OB-6 16262-005	BR-1 16262-009	BR-2 16262-010	BR-3 16262-011	BR-4 16262-012	BR-7 16262-015	BR-6 16262-014	BR-5 16262-013	BR-8 16262-016
Units	Quantitation Limit (ug/l)	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
VOLATILES										
1,2-Dichlorobenzene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	25 U
1,3-Dichlorobenzene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	25 U
1,4-Dichlorobenzene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	25 U
Dichlorodifluoromethane	0.50	0.50 U	0.50 U	0.50 U	0.84 B	0.50 U	0.34 J	0.50 U	0.29 JB	25 U
1,1-Dichloroethane	0.50	0.090 J	0.50 U	0.18 J	2.2	0.30 JB	0.55	0.50 U	2.7	25 U
1,2-Dichloroethane	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.52	0.50 U	2.2	25 U
1,1-Dichloroethene	0.50	0.50 U	0.50 U	0.33 J	2.6	0.16 J	0.50 U	0.080 J	1.3	25 U
cis-1,2-Dichloroethene	0.50	0.35 J	0.50 U	94 D	540 D	8.3	12	0.56	270 D	610 D
trans-1,2-Dichloroethene	0.50	0.50 U	0.50 U	0.50 U	0.53	0.50 U	0.50 U	0.50 U	0.40 J	25 U
1,2-Dichloropropane	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	25 U
1,3-Dichloropropane	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	25 U
2,2-Dichloropropane	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	25 U
1,1-Dichloropropene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	25 U
cis-1,3-Dichloropropene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	25 U
trans-1,3-Dichloropropene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	25 U
Ethylbenzene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	25 U
Hexachlorobutadiene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	25 U
1-Methylcyclohexene (Cumene)	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	25 U
p-Isopropyltoluene (p-Cymene)	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	25 U
Styrene Chloride	0.50	0.24 JB	0.19 JB	B	0.24 BJ	0.15 JB	0.34 JB	0.50 U	1.1 JB	14 JB

AR302137

TABLE 4-17

**GROUND WATER SAMPLE ANALYTICAL RESULTS  
SEPTEMBER 17 AND 18, 1991**

**RECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA**

Dames & Moore Sample Number Laboratory Sample Number		OB-6 16262-005	BR-1 16262-009	BR-2 16262-010	BR-3 16262-011	BR-4 16262-012	BR-7 16262-015	BR-6 16262-014	BR-5 16262-013	BR-8 16262-016
Units	Quantitation Limit (ug/l)	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
VOLATILES										
Naphthalene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	25 U
n-Propylbenzene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	25 U
Styrene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	25 U
1,1,1,2-Tetrachloroethane	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	25 U
1,1,2,2-Tetrachloroethane	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	25 U
Tetrachloroethane	0.50	17	0.50 U	0.50 U	0.12 J	0.50 U	1.9	8.4	0.50 U	25 U
Toluene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	25 U
1,2,3-Trichlorobenzene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	25 U
1,2,4-Trichlorobenzene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	25 U
1,1,1-Trichloroethane	0.50	0.11 J	0.50 U	0.36 J	1.6	0.23 J	0.98	0.12 J	2.5	2.5 J
1,1,2-Trichloroethane	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	25 U
Trichloroethane	0.50	1.0	0.30 J	490 D	1,400 D	78 D	84 D	3.2	970 D	1,400 D
Trichlorofluoromethane	0.50	0.50 U	0.91 B	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	7.5 JB
1,2,3-Trichloropropane	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	25 U
1,2,4-Trimethylbenzene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	25 U
1,3,5-Trimethylbenzene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	25 U
Vinyl chloride	0.50	0.50 U	0.50 U	0.50 U	0.89	0.50 U	0.50 U	0.50 U	0.42 J	25 U
o-Xylene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	25 U
m,p-Xylene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	25 U

AR302138

TABLE 4-17

GROUND WATER SAMPLE ANALYTICAL RESULTS  
SEPTEMBER 17 AND 18, 1991

RECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA

Dames & Moore Sample Number Laboratory Sample Number	OB-6 16262-005	BR-1 16262-009	BR-2 16262-010	BR-3 16262-011	BR-4 16262-012	BR-7 16262-015	BR-6 16262-014	BR-5 16262-013	BR-8 16262-016
	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
Units									
VOLATILES									
<u>Tentatively Identified Compounds</u>									
Carbon Disulfide	--	3.9 JB	11 JB	9.2 JB	3.3 JB	0.69 BJ	0.080 JB	6.0 JB	37 JB
tert-butylmethylether	--	ND	ND	0.85 J	0.41 J	0.25 J	1.2 J	0.50 J	0.47 J
Unknown	--	ND	ND	ND	ND	ND	2.0 J	ND	ND

- U Compound was not detected.  
 J Quantitation is approximate due to limitations identified during the quality control review.  
 B Compound was detected in field and/or laboratory blank. Result is questionable.  
 D Dilution was required to bring sample into linear calibration range.  
 R Unreliable result due to difference in response factors between initial and continuing calibrations.

AAW01948

AR302139

TABLE 4-18

**GROUND WATER SAMPLE ANALYTICAL RESULTS**  
**NOVEMBER 4, 1991**

**RECTICON/ALLIED STEEL SITE**  
**PARKER FORD, PENNSYLVANIA**

Denes & Moore Sample Number Laboratory Sample Number	Quantitation Limit (ug/l)	FB					
		ug/l	OB-2 17394-002	ug/l	OB-7 17394-0016	ug/l	OB-8 17394-0012
Units		ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
<b>VOLATILES</b>							
Benzene	0.50	0.50 U	5 U	0.50 U	0.50 U	0.50 U	0.50 U
Bromobenzene	0.50	0.50 U	5 U	0.50 U	0.50 U	0.50 U	0.50 U
Bromochloromethane	0.50	0.50 U	5 U	0.50 U	0.50 U	0.50 U	0.50 U
Bromodichloromethane	0.50	0.50 U	5 U	0.50 U	0.50 U	0.50 U	0.50 U
Bromoform	0.50	0.50 U	5 U	0.50 U	0.50 U	0.50 U	0.50 U
Bromomethane	0.50	0.50 U	5 U	0.50 U	0.50 U	0.50 U	0.50 U
n-Butylbenzene	0.50	0.50 U	5 U	0.50 U	0.50 U	0.50 U	0.50 U
sec-Butylbenzene	0.50	0.50 U	5 U	0.50 U	0.50 U	0.50 U	0.50 U
tert-Butylbenzene	0.50	0.50 U	5 U	0.50 U	0.50 U	0.50 U	0.50 U
Carbon tetrachloride	0.50	0.50 U	5 U	0.50 U	0.50 U	0.50 U	0.50 U
Chlorobenzene	0.50	0.50 U	5 U	0.50 U	0.50 U	0.50 U	0.50 U
Chloroethane	0.50	0.50 U	5 U	0.50 U	0.50 U	0.50 U	0.50 U
Chloroform	0.50	0.50 U	5 U	0.50 U	0.50 U	0.50 U	0.50 U
Chloromethane	0.50	0.50 U	5 U	0.50 U	0.50 U	0.50 U	0.50 U
2-Chlorotoluene	0.50	0.50 U	5 U	0.50 U	0.50 U	0.50 U	0.50 U
4-Chlorotoluene	0.50	0.50 U	5 U	0.50 U	0.50 U	0.50 U	0.50 U
Dibromochloromethane	0.50	0.50 U	5 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2-Dibromo-3-chloropropane (DBCP)	0.50	0.50 U	5 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2-Dibromomethane (EDB)	0.50	0.50 U	5 U	0.50 U	0.50 U	0.50 U	0.50 U
Dibromomethane	0.50	0.50 U	5 U	0.50 U	0.50 U	0.50 U	0.50 U

AR302140

TABLE 4-18

GROUND WATER SAMPLE ANALYTICAL RESULTS  
NOVEMBER 4, 1991

RECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA

Denes & Moore Sample Number Laboratory Sample Number		FB 17394-009	OB-2 17394-002	OB-7 17394-0016	OB-4 17394-008	OB-5 17394-007	OB-8 17394-0012
Units	Quantitation Limit (ug/l)	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
VOLATILES							
1,2-Dichlorobenzene	0.50	0.50 U	5 U	0.50 U	0.50 U	0.50 U	0.50 U
1,3-Dichlorobenzene	0.50	0.50 U	5 U	0.50 U	0.50 U	0.50 U	0.50 U
1,4-Dichlorobenzene	0.50	0.50 U	5 U	0.50 U	0.50 U	0.50 U	0.50 U
Dichlorodifluoromethane	0.50	0.50 U	5 U	0.50 U	0.50 U	0.50 U	0.50 U
1,1-Dichloroethane	0.50	0.50 U	16 D	0.50 U	0.50 U	3.2	3.5
1,2-Dichloroethane	0.50	0.50 U	5 U	0.50 U	0.50 U	2.6	4.3
1,1-Dichloroethene	0.50	0.50 U	5 U	0.50 U	0.50 U	0.50 U	0.50 U
cis-1,2-Dichloroethene	0.50	0.50 U	160 D	0.50 U	0.50 U	30 D	49 D
trans-1,2-Dichloroethene	0.50	0.50 U	5 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2-Dichloropropane	0.50	0.50 U	5 U	0.50 U	0.50 U	0.50 U	0.50 U
1,3-Dichloropropane	0.50	0.50 U	5 U	0.50 U	0.50 U	0.50 U	0.50 U
2,2-Dichloropropane	0.50	0.50 U	5 U	0.50 U	0.50 U	0.50 U	0.50 U
1,1-Dichloropropene	0.50	0.50 U	5 U	0.50 U	0.50 U	0.50 U	0.50 U
cis-1,3-Dichloropropene	0.50	0.50 U	5 U	0.50 U	0.50 U	0.50 U	0.50 U
trans-1,3-Dichloropropene	0.50	0.50 U	5 U	0.50 U	0.50 U	0.50 U	0.50 U
Ethylbenzene	0.50	0.50 U	5 U	0.50 U	0.50 U	0.50 U	0.50 U
Hexachlorobutadiene	0.50	0.50 U	5 U	0.50 U	0.50 U	0.50 U	0.50 U
1-Methylethylbenzene (Cumene)	0.50	0.50 U	5 U	0.50 U	0.50 U	0.50 U	0.50 U
p-Isopropyltoluene (p-Cymene)	0.50	0.50 U	5 U	0.50 U	0.50 U	0.50 U	0.50 U
Methylene Chloride	0.50	0.50 U	5 U	0.50 U	0.50 U	0.50 U	0.50 U

AR302141

TABLE 4-18

**GROUND WATER SAMPLE ANALYTICAL RESULTS  
NOVEMBER 4, 1991**

**RECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA**

Dames & Moore Sample Number Laboratory Sample Number		FB 17394-009	OB-2 17394-002	OB-7 17394-0016	OB-4 17394-006	OB-5 17394-007	OB-8 17394-0012
Units	Quantitation Limit (ug/l)	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
<b>VOLATILES</b>							
Naphthalene	0.50	0.50 U	5 U	0.50 U	0.50 U	0.50 U	0.50 U
n-Propylbenzene	0.50	0.50 U	5 U	0.50 U	0.50 U	0.50 U	0.50 U
Styrene	0.50	0.50 U	5 U	0.50 U	0.50 U	0.50 U	0.50 U
1,1,1,2-Tetrachloroethane	0.50	0.50 U	5 U	0.50 U	0.50 U	0.50 U	0.50 U
1,1,2,2-Tetrachloroethane	0.50	0.50 U	5 U	0.50 U	0.50 U	0.50 U	0.50 U
Tetrachloroethene	0.50	0.50 U	5 U	1.9	0.50 U	0.50 U	0.50 U
Toluene	0.50	0.50 U	5 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2,3-Trichlorobenzene	0.50	0.50 U	5 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2,4-Trichlorobenzene	0.50	0.50 U	5 U	0.50 U	0.50 U	0.50 U	0.50 U
1,1,1-Trichloroethane	0.50	0.50 U	7.3 D	0.50 U	0.50 U	2.3	2.1
1,1,2-Trichloroethane	0.50	0.50 U	5 U	0.50 U	0.50 U	0.50 U	0.50 U
Trichloroethene	0.50	0.50 U	170 D	2.0	0.50 U	48 D	110 D
Trichlorofluoromethane	0.50	0.50 U	5 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2,3-Trichloropropane	0.50	0.50 U	5 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2,4-Trimethylbenzene	0.50	0.50 U	5 U	0.50 U	0.50 U	0.50 U	0.50 U
1,3,5-Trimethylbenzene	0.50	0.50 U	5 U	0.50 U	0.50 U	0.50 U	0.50 U
Vinyl chloride	0.50	0.50 U	5 U	0.50 U	0.50 U	0.50 U	0.50 U
o-Xylene	0.50	0.50 U	5 U	0.50 U	0.50 U	0.50 U	0.50 U
m,p-Xylene	0.50	0.50 U	5 U	0.50 U	0.50 U	0.50 U	0.50 U

AR302142

TABLE 4-18

GROUND WATER SAMPLE ANALYTICAL RESULTS  
NOVEMBER 4, 1991

RECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA

Dames & Moore Sample Number Laboratory Sample Number		FB 17394-009	OB-2 17394-002	OB-7 17394-0016	OB-4 17394-006	OB-5 17394-007	OB-8 17394-0012
Units	Quantitation Limit (ug/l)	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
VOLATILES							
Tentatively Identified Compounds							
1,2-trichloro-1,2,2-trifluoroethane		ND	ND	ND	2.0 J	ND	ND

- U Compound was not detected.  
J Quantitation is approximate due to limitations identified during the quality control review.  
B Compound was detected in field and/or laboratory blank. Result is questionable.  
D Dilution was required to bring sample into linear calibration range.

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AR302143

TABLE 4-18

GROUND WATER SAMPLE ANALYTICAL RESULTS  
NOVEMBER 4, 1991

RECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA

Dames & Moore Sample Number Laboratory Sample Number		OB-6 17394-013	BR-1 17394-001	BR-2 17394-003	BR-3 17394-004	BR-4 17394-005	BR-7 17394-015	BR-6 17394-014	BR-5 17394-008	BR-8 17394-011
Units	Quantitation Limit (ug/l)	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
VOLATILES										
Benzene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	50 U
Bromobenzene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	50 U
Bromochloromethane	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	50 U
Bromodichloromethane	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	50 U
Bromoform	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	50 U
Bromomethane	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	50 U
n-Butylbenzene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	50 U
sec-Butylbenzene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	50 U
tert-Butylbenzene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	50 U
Carbon tetrachloride	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.93	0.50 U	50 U
Chlorobenzene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	50 U
Chloroethane	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	50 U
Chloroform	0.50	0.50 U	0.69	0.50 U	0.50 U	0.50 U	0.50 U	1.3	0.50 U	50 U
Chloromethane	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	50 U
2-Chlorotoluene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	50 U
4-Chlorotoluene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	50 U
Dibromochloromethane	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	50 U
1,2-Dibromo-3-chloropropane (DBCP)	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	50 U
1,2-Dibromomethane (EDB)	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	50 U
Dibromomethane	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	50 U

AR302144

TABLE 4-18

GROUND WATER SAMPLE ANALYTICAL RESULTS  
NOVEMBER 4, 1991

RECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA

Dames & Moore Sample Number Laboratory Sample Number		OB-6 17394-013	BR-1 17394-001	BR-2 17394-003	BR-3 17394-004	BR-4 17394-005	BR-7 17394-015	BR-6 17394-014	BR-5 17394-008	BR-8 17394-011
Units	Quantitation Limit (ug/l)	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
VOLATILES										
1,2-Dichlorobenzene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	50 U
1,3-Dichlorobenzene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	50 U
1,4-Dichlorobenzene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	50 U
Dichlorodifluoromethane	0.50	0.50 U	0.50 U	0.50 U	0.84 B	0.50 U	0.50 U	0.50 U	0.50 U	50 U
1,1-Dichloroethane	0.50	0.50 U	0.50 U	0.92	2.2	0.50 U	0.50 U	0.50 U	2.5	50 U
1,2-Dichloroethane	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	2.6	50 U
1,1-Dichloroethane	0.50	0.50 U	0.50 U	0.50 U	2.4	0.50 U	0.50 U	0.50 U	0.50 U	50 U
cis-1,2-Dichloroethane	0.50	0.50 U	0.50 U	88 D	580 D	14	10	0.50 U	170 D	530 D
trans-1,2-Dichloroethane	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	50 U
1,2-Dichloropropane	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	50 U
1,3-Dichloropropane	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	50 U
2,2-Dichloropropane	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	50 U
1,1-Dichloropropene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	50 U
cis-1,3-Dichloropropene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	50 U
trans-1,3-Dichloropropene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	50 U
Ethylbenzene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	50 U
Hexachlorobutadiene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	50 U
1-Methylethylbenzene (Cumene)	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	50 U
p-isopropyltoluene (p-Cymene)	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	50 U
Benzene Chloride	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	50 U

AR302145

TABLE 4-18

**GROUND WATER SAMPLE ANALYTICAL RESULTS**  
**NOVEMBER 4, 1991**

**RECTICON/ALLIED STEEL SITE**  
**PARKER FORD, PENNSYLVANIA**

Dames & Moore Sample Number Laboratory Sample Number		OB-6 17394-013	BR-1 17394-001	BR-2 17394-003	BR-3 17394-004	BR-4 17394-005	BR-7 17394-015	BR-6 17394-014	BR-5 17394-008	BR-8 17394-011
Units	Quantitation Limit (ug/l)	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
VOLATILES										
Naphthalene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	50 U
n-Propylbenzene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	50 U
Styrene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	50 U
1,1,1,2-Tetrachloroethane	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	50 U
1,1,2,2-Tetrachloroethane	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	50 U
Tetrachloroethene	0.50	17	0.50 U	0.50 U	0.50 U	0.50 U	2.7	8.8	0.50 U	50 U
Toluene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	50 U
1,2,3-Trichlorobenzene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	50 U
1,2,4-Trichlorobenzene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	50 U
1,1,1-Trichloroethane	0.50	0.50 U	0.50 U	0.67	1.5	0.50 U	0.99	0.50 U	2.5	50 U
1,1,2-Trichloroethane	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	50 U
Trichloroethene	0.50	2.5	0.50 U	400 D	1,400 D	120 D	83 D	3.4	780 D	1,200 D
Trichlorofluoromethane	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	50 U
1,2,3-Trichloropropene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	50 U
1,2,4-Trimethylbenzene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	50 U
1,3,5-Trimethylbenzene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	50 U
Vinyl chloride	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 J	50 U
o-Xylene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	50 U
m,p-Xylene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	50 U

AR302146

TABLE 4-18

**GROUND WATER SAMPLE ANALYTICAL RESULTS**  
**NOVEMBER 4, 1991**

**RECTICON/ALLIED STEEL SITE**  
**PARKER FORD, PENNSYLVANIA**

Denes & Moore Sample Number Laboratory Sample Number	OB-6 17394-013	BR-1 17394-001	BR-2 17394-003	BR-3 17394-004	BR-4 17394-005	BR-7 17394-015	BR-6 17394-014	BR-5 17394-008	BR-8 17394-011
Units	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
<b>VOLATILES</b>									
	Quantitation Limit (ug/l)								
<b>Tentatively Identified Compounds</b>									
Carbon Disulfide	--	ND	ND	ND	ND	ND	ND	ND	560 J
tert-butylmethylether	--	ND	ND	ND	ND	1.5 J	ND	ND	ND
Unknown	--	ND	ND	ND	ND	ND	2.0 J	ND	ND
1,1,2-trichloro-1,2,2-trifluoroethane	ND	ND	ND	ND	3 J	ND	ND	ND	ND

U Compound was not detected.  
 J Quantitation is approximate due to limitations identified during the quality control review.  
 B Compound was detected in field and/or laboratory blank. Result is questionable.  
 D Dilution was required to bring sample into linear calibration range.  
 R Unreliable result due to difference in response factors between initial and continuing calibrations.

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AR302147

TABLE 4-19

**REMOVAL ACTION  
RESIDENT LIST**

**RECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA**

RESIDENT/LANDOWNER	STATION	ADDRESS
<u>Semi-Annual Sampling</u>		
Lederer Greenhouse (Karl Lederer)	2A	Wells Road
William & Mildred Overfield	3A	Wells Road
Herman & Anna Lederer	4A	101 Wells Road
Paul Lederer (apartments)	8A	Rte. 724 and Rte. 883
Galicier (formerly known as Coventry Custom Kitchen) Tony Testa	16A	Rte. 724 and Wells Road
Chestmont Carpet Co. J. Barry Peronteau, V.P.	17A	Rte. 724
Transport System, Inc. Thomas Simms, President	23A 23B	Rte. 724 Prime Time Pets
Tyson's Body Shop Charles Tyson (shares well w/Ernest Overdorf)	25A	Old Schuylkill and Wells Road
Richard & Sara Heylman	26A 26B	Sporting Goods (East of Old Schuylkill) Apartment Building
Daniel DiPasquale	27A	Old Schuylkill Road
Robert & Catherine Leighton	29A	Old Schuylkill and Wells Rd.
Douglas Hartranft	30A	West of Wells Rd.
Ester Hetrick	33A	Old Schuylkill Rd.
Randall & Mary Ellen Shellenberger	34A	1453 Old Schuylkill Rd.
Michael & Charlotte Gormish	43A	Old Schuylkill Rd.
Clarence & Doris Schurr (Heitelburg, tenant)	60A	Rte. 724
<u>Quarterly Sampling*</u>		
Total Recovery, Inc. Dave Haan, General Manager	1A	Rte. 724 and Wells Rd.
Keystone Auto Center, Inc.	18A	Rte. 724 and Wells Rd.
Leisure Equipment, Inc.	19A	Rte. 724
Bell Telephone	22A	Rte. 724
Fritz Hansberry, Owner (Schlichter & Ott, tenants)	32A	Linfield Rd.
Auto Quest Tony Dulea, Owner	59A	2579 Rte. 724

\* Wells that have activated carbon filtration units.

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AR302148

TABLE 4-20

## OFF-SITE WELL WATER SAMPLING RESULTS

RECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA

Detected Compounds (ug/l)

Sample I.D.	Well Designation	Date Sampled	Detected Compounds (ug/l)			Toluene	Notes
			ICE	1,1,1-TCA	trans- 1,2-DCE		
1A	Total Recovery, Inc.	1/8/90	40	BMDL	BMDL	BMDL	
2A	Lederer Greenhouse (Herman and Karl Lederer)	1/8/90	BMDL	BMDL	BMDL	BMDL	
3A	Overfield, William and Milfred	1/8/90	BMDL	BMDL	BMDL	BMDL	
4A	Lederer, Herman and Anne	1/8/90	BMDL	BMDL	BMDL	BMDL	No water treatment
5A	Chet's Auto Body Shop	1/8/90	BMDL	BMDL	BMDL	BMDL	
6A <sup>1</sup>	Hansberry, Fredrick and Elizabeth	1/8/90	32	BMDL	33	BMDL	Post-carbon conditioner- kitchen tap
8A <sup>2</sup>	Lederer, Paul (four apartments)	1/8/90	BMDL	BMDL	BMDL	BMDL	Post-carbon conditioner- kitchen tap
10A	Elliot's Radio (Robert Elliot)	1/8/90	BMDL	BMDL	BMDL	BMDL	Sink tap, no water treat- ment
11A	Robinson, Richard and Patricia	1/8/90	BMDL	BMDL	BMDL	BMDL	Kitchen tap
12A	Shantz, Alfred and Helen	1/8/90	BMDL	BMDL	BMDL	BMDL	Kitchen tap

AR302149

TABLE 4-20

## OFF-SITE WELL WATER SAMPLING RESULTS

RECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA

Sample I.D.	Well Designation	Date Sampled	Detected Compounds (ug/l)				Toluene	Notes
			TCE	1,1,1-TCA	trans- 1,2-DCE			
14A	Lessig, Kenneth and Mary	1/8/90	BMDL	BMDL	BMDL		BMDL	Post-water conditioner - kitchen tap
15A	Shantz, Richard and Dorothy	1/8/90	BMDL	BMDL	BMDL		BMDL	Basement sink tap - no water treatment
16A	Coventry Custom Kitchen (Well 3) (Formerly Recticon)	1/9/90	BMDL	BMDL	BMDL		BMDL	Shop/basement tap
17A	Chesmont Carpet Company (John & Dorothy Paronto)	1/9/90	BMDL	5	BMDL		BMDL	Bathroom tap
18A	Keystone Auto Center, Inc. (Adam DeFrancesco)	1/9/90	31	BMDL	BMDL		BMDL	Outdoor hose
19A	Leisure Equipment, Inc. (Paul Lederer)	1/9/90	15	BMDL	BMDL		BMDL	Bathroom tap
20A	Pence Countertops, Inc. (Paul Lederer)	1/9/90	BMDL	BMDL	BMDL		BMDL	No water treatment
21A <sup>2</sup>	Lederer, Paul (four apartments)	1/9/90	BMDL	BMDL	BMDL		BMDL	Pre-carbon filter - basement hose

AR302150

TABLE 4-20

## OFF-SITE WELL WATER SAMPLING RESULTS

RECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA

Sample I.D.	Well Designation	Detected Compounds (ug/l)					Notes
		Date Sampled	ICE	1,1,1-ICA	trans- 1,2-DCE	Toluene	
22A	CCIDA (Bell Telephone is occupant - Gambone Brothers is owner)	1/9/90	190	BMDL	84	BMDL	
23A	Transport System, Inc. (Thomas and Judin Simms)	1/9/90	BMDL	BMDL	BMDL	BMDL	Water tank faucet
25A	Tyson's Body Shop (Ernest Overdorf, resident)	1/9/90	BMDL	BMDL	BMDL	5	Body shop faucet
26A	Heylman, Richard and Sara	1/9/90	BMDL	BMDL	BMDL	BMDL	Kitchen tap
27A	DiPasquale, Daniel	1/9/90	BMDL	BMDL	BMDL	BMDL	Well pump hose
28A	Townsend, Robert	1/9/90	BMDL	BMDL	BMDL	BMDL	Basement hose - water softener
29A	Leighton, Robert & Catherine	1/9/90	BMDL	BMDL	BMDL	BMDL	Post-water conditioner - kitchen tap
30A	Hartranft, Douglas	1/9/90	BMDL	BMDL	BMDL	BMDL	Kitchen tap - no water treatment
32A'	Rental home (Hansberry, Fredrick)	1/8/90	38	BMDL	36	BMDL	

AR302151

TABLE 4-20

## OFF-SITE WELL WATER SAMPLING RESULTS

RECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA

Sample I.D.	Well Designation	Date Sampled	Detected Compounds (ug/l)			Toluene	Notes
			TCE	1,1,1-TCA	trans- 1,2-DCE		
33A	Hetrick, Ester	1/9/90	BMDL	BMDL	BMDL	BMDL	Post-carbon conditioner - kitchen tap
34A	Hertel, Robert	1/9/90	BMDL	BMDL	BMDL	BMDL	Kitchen tap - no water treatment
35A	Taylor Industries (William and Bruce Taylor)	1/10/90	BMDL	BMDL	BMDL	BMDL	Shop tap - no water treatment
36A	Letter, Wilbert and Ruth	1/10/90	BMDL	BMDL	BMDL	BMDL	Kitchen tap
37A	Hoffecker, Mark	1/10/90	BMDL	BMDL	BMDL	BMDL	Kitchen tap - no water treatment
38A	Bell Telephone Building (Old Schuylkill Road)	1/10/90	BMDL	BMDL	BMDL	BMDL	Basement tap
39A	Weaver, John	1/10/90	BMDL	BMDL	BMDL	BMDL	Post-water treatment - sink tap
40A	Respen, F.J.	1/10/90	BMDL	BMDL	BMDL	BMDL	Kitchen tap - no water treatment

AR302152

TABLE 4-20

## OFF-SITE WELL WATER SAMPLING RESULTS

RECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA

Sample I.D.	Well Designation	Detected Compounds (ug/l)					Notes
		Date Sampled	ICE	1,1,1-ICA	trans- 1,2-DCE	Toluene	
42A	Shaner, Howard and Sara	1/10/90	BMDL	BMDL	BMDL	BMDL	Kitchen tap - no water treatment
43A	Gormish, Michael and Charlotte	1/10/90	BMDL	BMDL	BMDL	BMDL	Kitchen tap - solids filter only
45A	Symms, Kenneth and Charlotte	1/10/90	BMDL	BMDL	BMDL	BMDL	Basement water tank faucet - no water treatment
46A	Snaith, Vernon and Helen	1/10/90	BMDL	BMDL	BMDL	BMDL	Basement sink - no water treatment
47A	Levering, Philip and Joanne	1/10/90	BMDL	BMDL	BMDL	BMDL	Kitchen tap
48A	Beckley, Francis (occupant) (Tim Harsberry is owner)	1/10/90	BMDL	BMDL	BMDL	BMDL	Kitchen tap - no water treatment
49A	Williamson, Palmer and Juanita	1/10/90	BMDL	BMDL	BMDL	BMDL	Basement water source - water conditioner
50A	Scheaffer, Ervin and Alice	1/10/90	BMDL	BMDL	BMDL	BMDL	Kitchen tap - no water treatment

AR302153

TABLE 4-20

## OFF-SITE WELL WATER SAMPLING RESULTS

RECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA

Sample I.D.	Well Designation	Date Sampled	Detected Compounds (ug/l)				Notes
			TCE	1,1,1-TCA	trans- 1,2-DCE	Toluene	
51A	Jones, Abram and Frances	1/10/90	BMDL	BMDL	BMDL	BMDL	Kitchen tap - no water treatment
52A	Rinehart, Atlee and Carolyn	1/10/90	BMDL	BMDL	BMDL	BMDL	Kitchen tap - water filter for solids only
53A	Orosz, Thomas and Marian	1/11/90	BMDL	BMDL	BMDL	BMDL	Kitchen tap - no water treatment
54A	Geletag, Joseph and Rose	1/11/90	BMDL	BMDL	BMDL	BMDL	Kitchen tap
55A	Northacker, Edith	1/11/90	BMDL	BMDL	BMDL	BMDL	Kitchen tap - no water treatment
56A	Malcolm, Monahan and Darlyn	1/11/90	BMDL	BMDL	BMDL	BMDL	

## Explanation:

TCE = trichloroethene  
 1,1,1-TCA = 1,1,1-trichloroethane  
 trans-1,2-DCE = trans-1,2-dichloroethene  
 BMDL = below method detection level

## Notes:

1. Sample I.D. numbers 6A and 32A originated from the same well. This well supplies water to two separate residences.
2. Sample I.D. numbers 8A and 21A originated from the same well. Sample 8A was collected after a filtration unit; whereas 21A was collected before the filtration unit.
3. All samples were analyzed by Lancaster Laboratory of Lancaster, Pennsylvania for volatile organic compounds by EPA Method No. 624.

AR302154

TABLE 4-21

## SUMMARY OF QUARTERLY OFF-SITE WELL WATER SAMPLING RESULTS

RECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA

Name (Station)	Date	VOLATILE ORGANIC COMPOUNDS (ug/l)										
		Chloro- methane	Bromo- methane	Vinyl Chloride	Chloro- ethane	Methylene Chloride	Acetone	Dichlorodi- fluoro- methane	Trichloro- fluoro- methane	1,1- Dichloro- ethane	1,1- Dichloro- ethane	1,2- Dichloro- ethane (cis/trans)
Total Recovery, Inc. (1A)	tap 6/20/90	<10	<10	<10	<10	<5	13	NA	NA	<5	<5	<5
	mid 6/20/90	<10	<10	<10	<10	<5	13	NA	NA	<5	<5	<5
	tap 10/10/90	<5	<5	<1	<1	<1	NA	<2	<1	<1	<1	<1
	mid 10/10/90	<5	<5	<1	<1	<1	NA	<2	<1	<1	<1	<1
	tap 1/11/91	<5	<5	<1	<1	1	NA	<2	<1	<1	<1	<1
	mid 1/11/91	<5	<5	<1	<1	1	NA	<2	<1	<1	<1	<1
	tap 4/1/91	<5	<5	<1	<1	<1	NA	<2	<1	<1	<1	<1
	mid 4/1/91	<5	<5	<1	<1	<1	NA	<2	<1	<1	<1	<1
	tap 7/1/91	<5	<5	<1	<1	<1	NA	<2	<1	<1	<1	<1
	mid 7/1/91	<5	<5	<1	<1	<1	NA	<2	<1	<1	<1	<1
	well 7/1/91	<5	<5	<1	<1	<1	NA	<2	<1	<1	<1	2
	tap 6/20/90	<10	<10	<10	<10	<5	<10	NA	NA	<5	<5	<5
Keystone Auto Center, Inc. (18A)	mid 6/20/90	<10	<10	<10	<10	<5	<10	NA	NA	<5	<5	<5
	tap 10/10/90	<5	<5	<1	<1	<1	NA	<2	<1	<1	<1	<1
	mid 10/10/90	<5	<5	<1	<1	<1	NA	<2	<1	<1	<1	<1
	tap 1/11/91	<5	<5	<1	<1	1	NA	<2	<1	<1	<1	<1
	mid 1/11/91	<5	<5	<1	<1	<1	NA	<2	<1	<1	<1	<1
	tap 4/1/91	<5	<5	<1	<1	<1	NA	<2	<1	<1	<1	<1
	mid 4/1/91	<5	<5	<1	<1	<1	NA	<2	<1	<1	<1	<1
	tap 7/1/91	<5	<5	<1	<1	<1	NA	<2	<1	<1	<1	<1
	mid 7/1/91	<5	<5	<1	<1	<1	NA	<2	<1	<1	<1	<1
	well 7/1/91	<5	<5	<1	<1	<1	NA	<2	<1	<1	<1	3

AR302155

TABLE 4-21

## SUMMARY OF QUARTERLY OFF-SITE WELL WATER SAMPLING RESULTS

RECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA

Name (Station)	Date	VOLATILE ORGANIC COMPOUNDS (ug/l)										
		Chloroform	1,2-Dichloro-ethane	1,1,1-Trichloro-ethane	Carbon Tetra-chloride	Bromo-dichloro-methane	1,2-Dichloro-propene	trans-1,3-Dichloro-propene	Trichloro-ethene	Dibromo-chloro-methane	1,1,2-Trichloro-ethane	Benzene
Total Recovery, Inc. (1A)	tap 6/20/90	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	
	mid 6/20/90	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	
	tap 10/10/90	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	
	mid 10/10/90	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	
	tap 1/11/91	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
	mid 1/11/91	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
	tap 4/1/91	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
	mid 4/1/91	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
	tap 7/1/91	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
	mid 7/1/91	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
	well 7/1/91	<1	<1	<1	<1	<1	<1	<1	16	<1	<2 <sup>nd</sup>	
	tap 6/20/90	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	
	mid 6/20/90	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	
	tap 10/10/90	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	
	mid 10/10/90	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	
Keystone Auto Center, Inc. (18A)	tap 1/11/91	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
	mid 1/11/91	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
	tap 4/1/91	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
	mid 4/1/91	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
	tap 7/1/91	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
	mid 7/1/91	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
	well 7/1/91	<1	<1	<1	<1	<1	<1	<1	24	<1	<2 <sup>nd</sup>	

AR302156

TABLE 4-21

## SUMMARY OF QUARTERLY OFF-SITE WELL WATER SAMPLING RESULTS

RECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA

Name (Station)	Date	VOLATILE ORGANIC COMPOUNDS (ug/l)										
		2-Chloro- ethyl vinyl ether	cis-1,3-Di- chloro- propene	Bromoform	Tetra- chloro- ethene	1,1,2,2- Tetra- chloroethane	Toluene	Chloro- benzene	Ethyl Benzene	1,2-Di- chloro- benzene	1,3-Di- chloro- benzene	1,4-Di- chloro- benzene
Total Recovery, Inc. (11A)	tap 6/20/90	NA	<5	<5	<5	<5	<5	<5	<5	NA	NA	NA
	mid 6/20/90	NA	<5	<5	<5	<5	<5	<5	<5	NA	NA	NA
	tap 10/10/90	<10	<1	<2	<1	<2	NA	<1	NA	NA	NA	NA
	mid 10/10/90	<10	<1	<2	<1	<2	NA	<1	NA	NA	NA	NA
	tap 1/11/91	<10	<1	<2	<1	<2	<1	<1	<1	<1	<1	<1
	mid 1/11/91	<10	<1	<2	<1	<2	<1	<1	<1	<1	<1	<1
	tap 4/1/91	<10	<1	<2	<1	<2	<1	<1	<1	<1	<1	<1
	mid 4/1/91	<10	<1	<2	<1	<2	<1	<1	<1	<1	<1	<1
	tap 7/1/91	<10	<1	<2	<1	<2	<1	<1	<1	<1	<1	<1
	mid 7/1/91	<10	<1	<2	<1	<2	<1	<1	<1	<1	<1	<1
	well 7/1/91	<10	<1	<2	<1	<2	<1	<1	<1	<1	<1	<1
	tap 6/20/90	NA	<5	<5	<5	<5	<5	<5	<5	NA	NA	NA
	mid 6/20/90	NA	<5	<5	<5	<5	<5	<5	<5	NA	NA	NA
	tap 10/10/90	<10	<1	<2	<1	<2	NA	<1	NA	NA	NA	NA
Keystone Auto Center, Inc. (118A)	mid 10/10/90	<10	<1	<2	<1	<2	NA	<1	NA	NA	NA	NA
	tap 1/11/91	<10	<1	<2	<1	<2	<1	<1	<1	<1	<1	<1
	mid 1/11/91	<10	<1	<2	<1	<2	<1	<1	<1	<1	<1	<1
	tap 4/1/91	<10	<1	<2	<1	<2	<1	<1	<1	<1	<1	<1
	mid 4/1/91	<10	<1	<2	<1	<2	<1	<1	<1	<1	<1	<1
	tap 7/1/91	<10	<1	<2	<1	<2	<1	<1	<1	<1	<1	<1
	mid 7/1/91	<10	<1	<2	<1	<2	<1	<1	<1	<1	<1	<1
	well 7/1/91	<10	<1	<2	<1	<2	<1	<1	<1	<1	<1	<1
	tap 6/20/90	<10	<1	<2	<1	<2	<1	<1	<1	<1	<1	<1
	mid 6/20/90	<10	<1	<2	<1	<2	<1	<1	<1	<1	<1	<1

AR302157

TABLE 4-21

## SUMMARY OF QUARTERLY OFF-SITE WELL WATER SAMPLING RESULTS

RECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA

Name (Station)	Date	VOLATILE ORGANIC COMPOUNDS (ug/l)									
		Chloro- methane	Bromo- methane	Vinyl Chloride	Chloro- ethane	Methylene Chloride	Acetone	Dichloro- fluoro- methane	Trichloro- fluoro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane (cis/trans)
Leisure Equipment, Inc. (19A)	tap 6/20/90	<10	<10	<10	<10	<5	17	NA	NA	<5	<5
	mid 6/20/90	<10	<10	<10	<10	<5	<10	NA	NA	<5	<5
	tap 10/10/90	<5	<5	<1	<1	<1	NA	<2	<1	<1	<1
	mid 10/10/90	<5	<5	<1	<1	<1	NA	<2	<1	<1	<1
	tap 1/11/91	<5	<5	<1	<1	28	NA	<2	<1	<1	<1
	mid 1/11/91	<5	<5	<1	<1	28	NA	<2	<1	<1	<1
	tap 4/11/91	<5	<5	<1	<1	<1	NA	<2	<1	<1	<1
	mid 4/11/91	<5	<5	<1	<1	<1	NA	<2	<1	<1	<1
	tap 7/11/91	<5	<5	<1	<1	<1	NA	<2	<1	<1	<1
	mid 7/11/91	<5	<5	<1	<1	<1	NA	<2	<1	<1	<1
	well 7/11/91	<5	<5	<1	<1	<1	NA	<2	<1	<1	1
	tap 6/20/90	<10	<10	<10	<10	<5	<10	NA	NA	<5	<5
	mid 6/20/90	<10	<10	<10	<10	<5	11	NA	NA	<5	<5
	tap 10/10/90	<5	<5	<1	<1	<1	NA	<2	<1	<1	<1
	mid 10/10/90	<5	<5	<1	<1	<1	NA	<2	<1	<1	<1
Bell Telephone (22A)	tap 1/11/91	<5	<5	<1	<1	2	NA	<2	<1	<1	<1
	mid 1/11/91	<5	<5	<1	<1	<1	NA	<2	<1	<1	<1
	tap 4/11/91	<5	<5	<1	<1	<1	NA	<2	<1	<1	<1
	mid 4/11/91	<5	<5	<1	<1	<1	NA	<2	<1	<1	<1
	tap 7/11/91	<5	<5	<1	<1	<1	NA	<2	<1	<1	<1
	mid 7/11/91	<5	<5	<1	<1	<1	NA	<2	<1	<1	<1
	well 7/11/91	<5	<5	<1	<1	<1	NA	<2	<1	<1	65

AR302158

TABLE 4-21

## SUMMARY OF QUARTERLY OFF-SITE WELL WATER SAMPLING RESULTS

RECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA

Name (Station)	Date	VOLATILE ORGANIC COMPOUNDS (ug/l)										
		Chloroform	1,2-Dichloro-ethane	1,1,1-Trichloro-ethane	Carbon Tetra- chloride	Bromo- dichloro- methane	1,2-Dichloro- propane	trans-1,3-Dichloro- propane	Trichloro- ethene	Dibromo- chloro- methane	1,1,2-Trichloro- ethane	Benzene
Leisure Equipment, Inc. (19A)	tap 6/20/90	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	
	mid 6/20/90	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	
	tap 10/10/90	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	
	mid 10/10/90	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	
	tap 1/11/91	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
	mid 1/11/91	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
	tap 4/1/91	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
	mid 4/1/91	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
	tap 7/1/91	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
	mid 7/1/91	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
	well 7/1/91	<1	<1	2	<1	<1	<1	<1	14	<1	<1	
	tap 6/20/90	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	
Bell Telephone (22A)	mid 6/20/90	<5	<5	<5	<5	<5	<5	<5	<5	<5	NA	
	tap 10/10/90	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	
	mid 10/10/90	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
	tap 1/11/91	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
	mid 1/11/91	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
	tap 4/1/91	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
	mid 4/1/91	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
	tap 7/1/91	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
	mid 7/1/91	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
	well 7/1/91	<1	<1	<1	<1	<1	<1	150	<5	<5	<50 <sup>m</sup>	

AR302159

TABLE 4-21

## SUMMARY OF QUARTERLY OFF-SITE WELL WATER SAMPLING RESULTS

RECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA

Name (Station)	Date	VOLATILE ORGANIC COMPOUNDS (ug/l)										
		2-Chloro-ethyl vinyl ether	cis-1,3-Di-chloro-propene	Bromoform	Tetra-chloro-ethene	1,1,2,2-Tetra-chloroethane	Toluene	Chloro-benzene	Ethyl Benzene	1,2-Di-chloro-benzene	1,3-Di-chloro-benzene	1,4-Di-chloro-benzene
Leisure Equipment, Inc. (19A)	tap	6/20/90	NA	<5	<5	<5	<5	<5	<5	NA	NA	NA
	mid	6/20/90	NA	<5	<5	<5	<5	<5	<5	NA	NA	NA
	tap	10/10/90	<10	<1	<2	<1	<2	NA	NA	NA	NA	NA
	mid	10/10/90	<10	<1	<2	<1	<2	NA	<1	NA	NA	NA
	tap	1/11/91	<10	<1	<2	<1	<2	<1	<1	<1	<1	<1
	mid	1/11/91	<10	<1	<2	<1	<2	<1	<1	<1	<1	<1
	tap	4/1/91	<10	<1	<2	<1	<2	<1	<1	<1	<1	<1
	mid	4/1/91	<10	<1	<2	<1	<2	<1	<1	<1	<1	<1
	tap	7/1/91	<10	<1	<2	<1	<2	<1	<1	<1	<1	<1
	mid	7/1/91	<10	<1	<2	<1	<2	<1	<1	<1	<1	<1
	well	7/1/91	<10	<1	<2	<1	<2	<1	<1	<1	<1	<1
	tap	6/20/90	NA	<5	<5	<5	<5	<5	<5	NA	NA	NA
Bell Telephone (22A)	mid	6/20/90	NA	<5	<5	<5	<5	<5	<5	NA	NA	NA
	tap	10/10/90	<10	<1	<2	<1	<2	NA	NA	NA	NA	NA
	mid	10/10/90	<10	<1	<2	<1	<2	NA	<1	NA	NA	NA
	tap	1/11/91	<10	<1	<2	<1	<2	<1	<1	<1	<1	<1
	mid	1/11/91	<10	<1	<2	<1	<2	<1	<1	<1	<1	<1
	tap	4/1/91	<10	<1	<2	<1	<2	<1	<1	<1	<1	<1
	mid	4/1/91	<10	<1	<2	<1	<2	<1	<1	<1	<1	<1
	tap	7/1/91	<10	<1	<2	<1	<2	<1	<1	<1	<1	<1
	mid	7/1/91	<10	<1	<2	<1	<2	<1	<1	<1	<1	<1
	well	7/1/91	<10	<1	<2	<1	<2	<1	<1	<1	<1	<2

AR302160

TABLE 4-21

## SUMMARY OF QUARTERLY OFF-SITE WELL WATER SAMPLING RESULTS

RECTICON/ALLIED STEEL SITE  
PARKER FORD, PENNSYLVANIA

Name (Station)	Date	VOLATILE ORGANIC COMPOUNDS (ug/l)										
		Chloro- methane	Bromo- methane	Vinyl Chloride	Chloro- ethane	Methylene Chloride	Acetone	Dichlorodi- fluoro- methane	Trichloro- fluoro- methane	1,1- Dichloro- ethane	1,1- Dichloro- ethane	1,2- Dichloro- ethane (cis/trans)
Auto Quest (59A)	well	<10	<10	<10	<10	<5	<10	NA	NA	<5	<5	480
	tap	<10	<10	<10	<10	<5	NA	NA	<5	<5	<5	<5
	mid	<10	<10	<10	<10	<5	NA	NA	<5	<5	<5	<5
	tap	<5	<5	<1	<1	<1	NA	<2	<1	<1	<1	<1
	mid	<5	<5	<1	<1	<1	NA	<2	<1	<1	<1	<1
	tap	<5	<5	<1	<1	<1	NA	<2	<1	<1	<1	<1
	mid	<5	<5	<1	<1	<1	NA	<2	<1	<1	<1	<1
	tap	<5	<5	<1	<1	<1	NA	<2	<1	<1	<1	<1
	mid	<5	<5	<1	<1	<1	NA	<2	<1	<1	<1	<1
	tap	<5	<5	<1	<1	<1	NA	<2	<1	<1	<1	<1
	mid	<5	<5	<1	<1	<1	NA	<2	<1	<1	<1	<1
	well	<30	<30	<5	<5	<5	NA	<10	<5	<5	<5	2100
Hansberry Apts. (Ott: 32A)	tap	<10	<10	<10	<10	<5	14	NA	NA	<5	<5	<5
	mid	<10	<10	<10	<10	<5	12	NA	NA	<5	<5	<5
	tap	<5	<5	<1	<1	<1	NA	<2	<1	<1	<1	<1
	mid	<5	<5	<1	<1	<1	NA	<2	<1	<1	<1	<1
	tap	<5	<5	<1	<1	<1	NA	<2	<1	<1	<1	<1
	mid	<5	<5	<1	<1	<1	NA	<2	<1	<1	<1	<1
	tap	<5	<5	<1	<1	<1	NA	<2	<1	<1	<1	<1
	mid	<5	<5	<1	<1	<1	NA	<2	<1	<1	<1	<1
	tap	<5	<5	<1	<1	<1	NA	<2	<1	<1	<1	<1
	mid	<5	<5	<1	<1	<1	NA	<2	<1	<1	<1	<1
	well	<5	<5	<1	<1	<1	NA	<2	<1	<1	<1	13

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